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TOSHIBA

SERVICE MANUAL

VIDEO CASSETTE RECORDER

W-607

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SERVICE GUIDE

- **Assy Cylinder, the Capsrtan Motor & TM-Block are used for this model, as shown below.**

The Maker of Assy Cylinder		The Maker of Assy Capstan Motor		Two kinds of TM-Block	
1	ALPS	1	SANKYO	1	SIF available
2	SEM	2	SEM	2	Not SIF availablea

Assy-Cylinder

How to identify the Assy-Cylinder

ALPS Cylinder

CONNECTOR ; Pin 7 or Pin 5

SEM Cylinder

CONNECTOR ; Pin 5

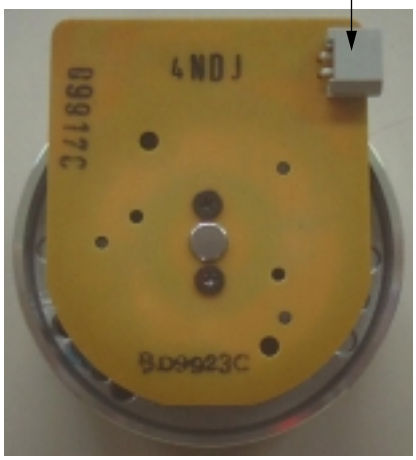


Fig. 1

1) Three kinds of the Assy-Cylinder as shown below.

❶ ALPS Cylinder
- → Connector ; Pin 7
- → Connector ; Pin 5

❷ SEM Cylinder
- → Connector ; Pin 5

2) When replacing the Assy-Cylinder, be sure to replace only **"SEM Cylinder"**.
The only part-no of **"SEM Cylinder"** is shown in the "CH7. Replacement Parts List" of Service Manual.

3) When changing from **ALPS (connector ; pin 7)** cylinder to **SEM (connector ; pin 5)** cylinder.
- Change CN605 (Connector ; pin 7 → pin 5)
- Change CN605B (Cable-Flat ; pin 7 → pin 5)

4) After replacing the "SEM Cylinder", use type **"C, D, G, H"** optional for **"NVRAM Option Setting"**. (See page 5-9)

Capstam Motor

How to identify the Capstan Motor

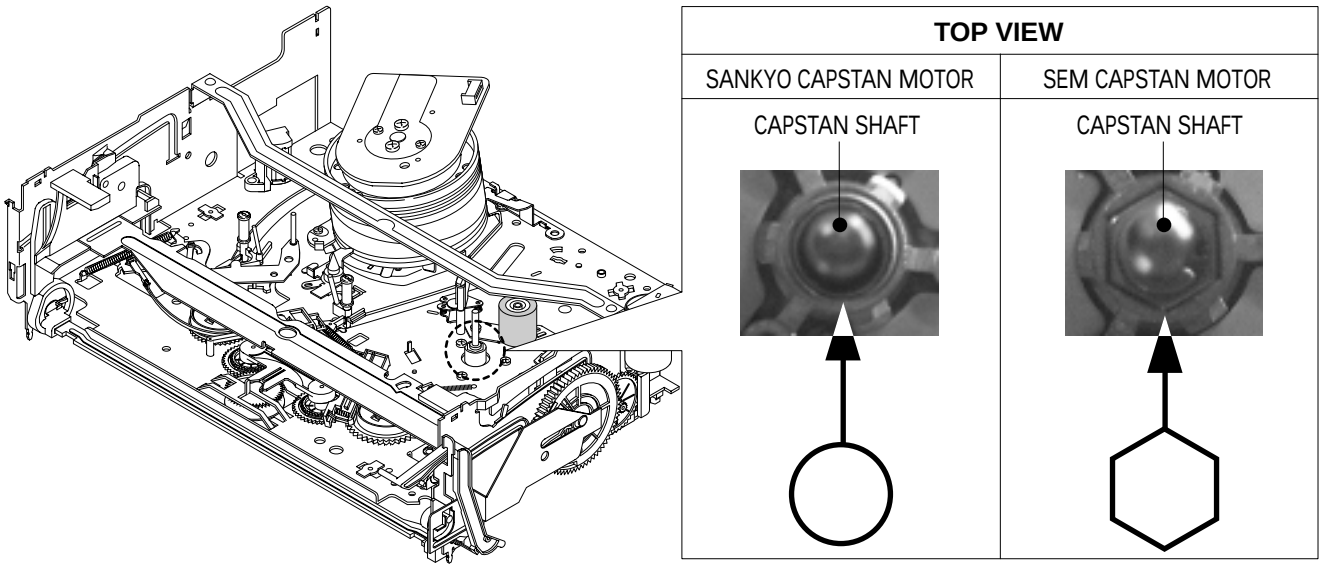


Fig. 2

1) Two kinds of the Capstan Motor
   - ❶ Sankyo Capstan Motor
   - ❷ SEM Capstan Motor

2) When replacing the Capstan Motor, be sure to replace only **"SEM Capstan Motor"**.
   The only part-no of **"SEM Capstan Motor"** is shown in the "CH7. Replacement Parts List" of Service Manual.

3) After replacing the "SEM Capstan Motor", use type **"E, F, G, H"** optional for **"NVRAM Option Setting"**. (See page 5-9)

TM-BLOCK

1) Two kinds of the TM-Blovk
   - ❶ SIF available
   - ❷ Not SIF available

2) How to identify TM-Block ; See page 5-11 (Fig. 5-21)
   - In case there is VR501 ; Not SIF available
   - In case there is no VR501 ; SIF available

3) When replacing the TM-Block as a service parts, be sure to replace only the TM-Block which is SIF available.
   The only part-no of **"SIF available"** is shown in the "CH7. Replacement Parts List" of Service Manual.

4) After replacing "TM-Block", use type **"B, D, F, H"** optional for **"NVRAM Option Setting"** regardless of VR501. (See page 5-9)

1. Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

2. When reinstalling the chassis and its assemblies, be sure to restore all pretective devices, including : control knobs and compartment covers.

3. Make sure that there are no cabinet openings through which people--particularly children --might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

   If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (See Fig. 1-1) :
   Warning : Do not use an isolation transformer during this test. Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, *Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

5. With the unit completely reassembled, plug the AC line cord directly the power outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known erath ground (metal water pipe, conduit, etc.) and all exposed metal parts, including : antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

6. X-ray Limits :
   The picture tube is designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the picture tube only with one that is the same type as the original.

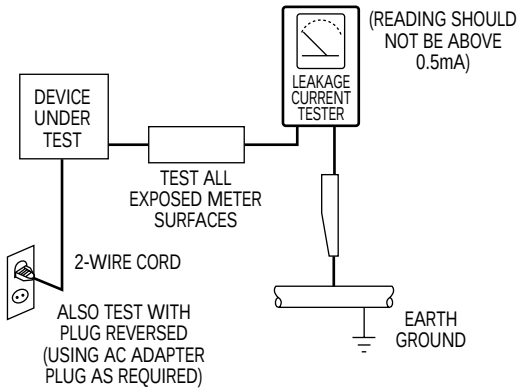

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METER SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

7. Antenna Cold Check :
   With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong.
   Connect the other lead to the coaxial connector.

8. High Voltage Limit :
   High voltage must be measured each time servicing is done on the B+, horizontal deflection or high voltage circuits.

   Heed the high voltage limits. These include the *X-ray protection Specifications Label*, and the *Product Safety and X-ray Warning Note* on the service data schematic.

9. Some semiconductor ("solid state") devices are easily damaged by static electricity.
   Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.

10. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging Wrist-strap device. (Be sure to remove it prior to applying power--this is an electric shock precaution.)

11. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

12. Design Alteration Warning :
    Never alter or add to the mechanical or electrical design of this unit. Example : Do not add auxiliary audio or video connectors.
    Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.

13. Hot Chassis Warning :
    Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord. If an isolation transformer is not used, these units may be safely serviced only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC source.

    To confirm that the AC power plug is inserted correctly, do the following : Using an AC voltmeter, measure the voltage between the chassis and a known earth ground. If the reading is greater than 1.0V, remove the AC power plug, reverse its polarity and reinsert. Re-measure the voltage between the chassis and ground.

14. Some TV chassis are designed to operate with 85 volts AC between chassis and ground, regardless of the AC plug polarity. These units can be safely serviced only if an isolation transformer inserted between the receiver and the power source.

15. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

16. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

17. Observe the original lead dress, especially near the following areas : Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.

18. Picture Tube Implosion Warning :
    The picture tube in this receiver employs "integral implosion" protection. To ensure continued implosion protection, make sure that the replacement picture tube is the same as the original.

19. Do not remove, install or handle the picture tube without first putting on shatterproof goggles equipped with side shields. Never handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; do not try to remove such "permanently attached" yokes from the picture tube.

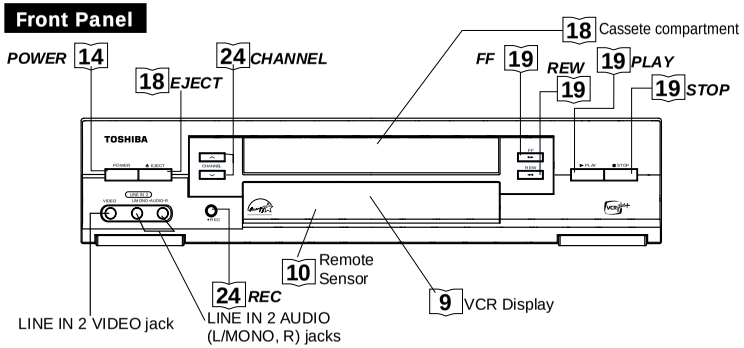
20. Product Safety Notice :
    Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original--even if the replacement is rated for higher voltage, wattage, etc.

    Components that are critical for safety are indicated in the circuit diagram by shading, (or).
    Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

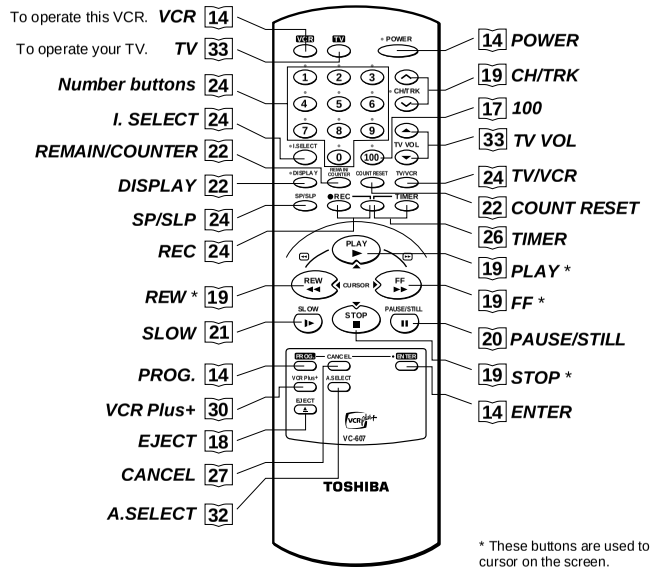
Identification of Controls

See the page in ☐ for details.
This manual shows the names of buttons in italics.

Front Panel

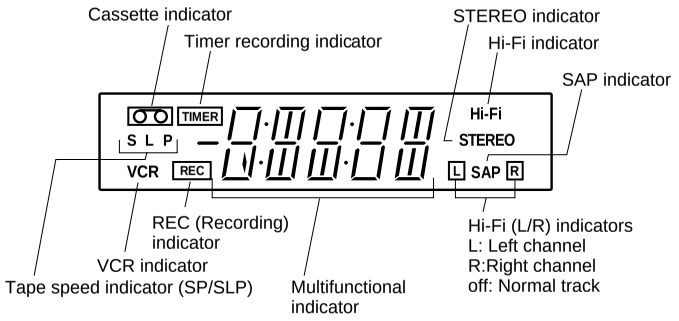


Remote Control

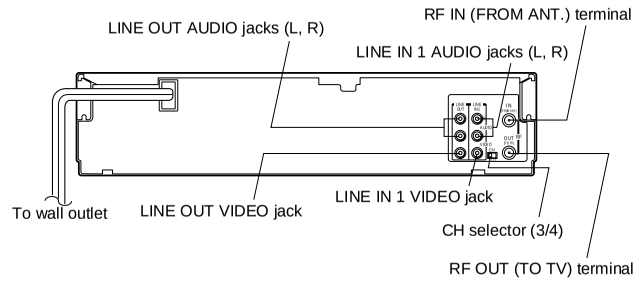


* These buttons are used to control the cursor on the screen.

VCR Display



Rear Panel


LINE OUT AUDIO jacks (L, R)
RF IN (FROM ANT.) terminal
LINE IN 1 AUDIO jacks (L, R)
To wall outlet
LINE OUT VIDEO jack
LINE IN 1 VIDEO jack
CH selector (3/4)
RF OUT (TO TV) terminal

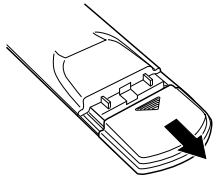
LINE IN 1 AUDIO (Rear), 2 (Front) jacks
If the connected equipment is monaural (has one audio output jack), connect the L (MONO) side, the same sound is recorded on both L and R on the Hi-Fi track.

How to Use the Remote Control

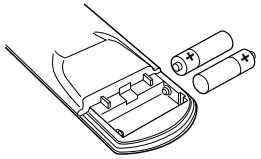
This section explains how to get ready for remote control operation.

Setting up the Remote Control

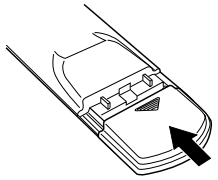
1 Open the battery compartment lid on the rear panel.



2 Install 2 batteries (“AAA” size) following the polarity diagrams.



3 Close the battery compartment lid.



4 Point the remote control at the VCR and press the buttons within the operating range.
Distance: within about 7 m from the front of the remote sensor
Angles: within about 30° in every direction

Notes on batteries

- The life of the batteries is about 1 year depending on the conditions of use.
- If the remote control does not operate correctly, replace all batteries with new ones.
- If the remote control is not to be used for a long period of time, remove the batteries to avoid possible damage from battery corrosion.

Caring for the remote control

- Do not expose the remote sensor of the VCR to a strong light source such as direct sunlight or illumination (especially high-frequency lighting) when using the remote control.
- Be careful not to spill water on the remote control or to place it on anything wet, and avoid sharp impacts.

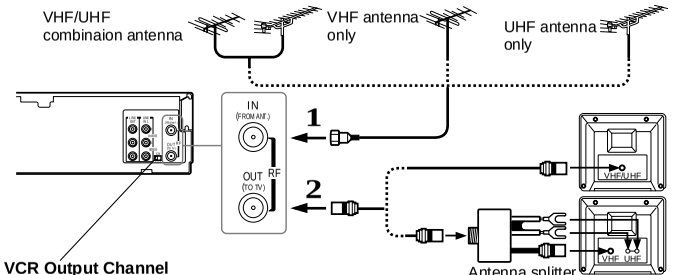
Connections

Before you use this VCR, it is necessary to connect it to your TV. Several ways of connecting are available depending on your use of TV or cable box. Select one which is applicable to your equipment.

Antenna / VCR / TV Connection

1 Disconnect the antenna cable from your TV and connect it to the **RF IN** terminal on the VCR.

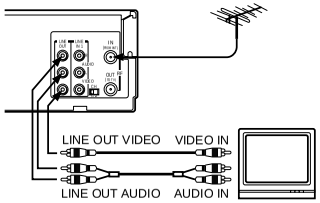
2 Connect the **RF OUT** terminal to the TV.



Setting the VCR Output Channel
When the VCR is connected in this way, the VCR sends the output signals to channel 3 or 4 on your TV. Set the output channel selector (CH selector) of the VCR to “3” or “4”, whichever is vacant in your area.

AUDIO / VIDEO Connections

The AUDIO/VIDEO jacks are also available to connect your TV.

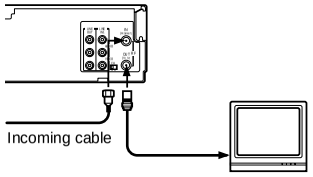


When connected your TV using the AUDIO / VIDEO OUT jacks

To watch video pictures, set the video input mode on your TV. For the video input mode, refer to the manual of your TV.

Cable Connection

Choose one of the below according to your usage of the cable box.



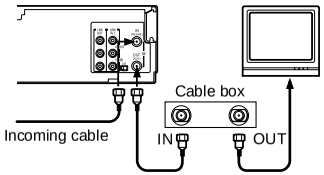
This set-up will enable you to:

– record an unscrambled channel.
– watch an unscrambled channel while recording it.
– record an unscrambled channel while watching another (only when you connect a cable-compatible TV).

You will need to:

- select TV channel 3 or 4 to receive video signals.
- to record a channel while watching another, press ***TV/VCR*** on the remote control to turn off the “VCR” indicator in the VCR display and select a desired channel on the TV (only when you connect a cable-compatible TV).

Connections (continued)

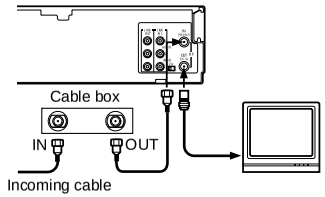


This set-up will enable you to:

– record an unscrambled channel.
– watch an unscrambled channel while recording it.
– record an unscrambled channel while watching another (scrambled or unscrambled).

You will need to:

- set TV channel to the output channel of the cable box.
- turn on the cable box and select cable channel 3 or 4 according to the output channel of the VCR.
- to record a channel while watching another, press ***TV/VCR*** on the remote control to turn off the "VCR" indicator in the VCR display and select a desired cable channel on the cable box.

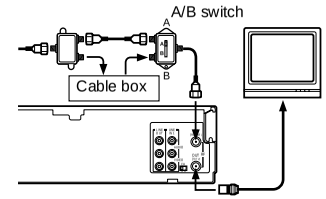


This set-up will enable you to:

– watch an unscrambled or scrambled channel while recording it.
– record any channels through the cable box.

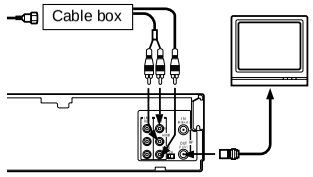
You will need to:

- set TV channel 3 or 4 to receive video signals. (See page 11.)
- set VCR channel to the output channel of the cable box, and select a desired cable channel on the cable box.
- while the VCR is turned off or the "VCR" indicator is not lit in the VCR display, set TV channel to the output channel of the cable box.



This set-up will enable you to:

– watch an unscrambled or scrambled channel while recording it.
– record an unscrambled channel while watching another unscrambled channel (only when you connect a cable-compatible TV).
- A/B switch "A": record and watch an unscrambled channel which comes bypassing the cable box.
- A/B switch "B": record and watch a scrambled or unscrambled channel coming through the cable box.



This set-up will enable you to:

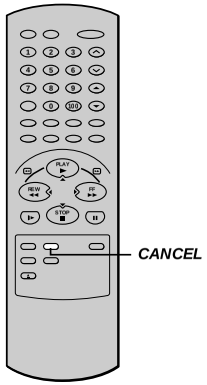
– watch or record a channel through the cable box via the LINE IN 1 (AUDIO/VIDEO) jacks.

You will need to:

- press ***I.SELECT*** so that the VCR display shows "L1".

Auto Set Up

The VCR's clock and tuner channels are set automatically when the VCR is plugged into the AC outlet.



Auto Set up

1 Plug the VCR into the AC outlet

2 "AUTO" blink while the VCR automatically sets the clock using the data broadcast by the local TV stations.
While "AUTO" is blinking, channel memory is also set automatically.

3 When Auto set up has been completed, the VCR is on standby mode.

Notes

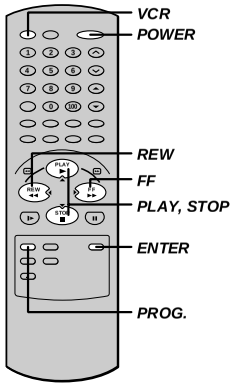
- It may takes several minutes during the Auto set-up
- Press ***CANCEL*** on the remote control to cancel the auto set-up.

Initial Settings Using On-screen Display

The language selection and clock setting must be set first when VCR is first plugged in or after it encounters a power failure.

Preparation

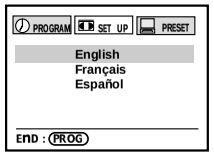
- Turn on the TV, and select the video channel (3 or 4), or the video input mode if you made the Audio/Video connection (page 11).
- **Press *VCR* to set the remote control operating the VCR.**



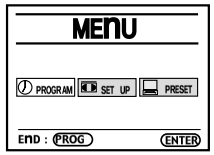
Setting the Language

1 Press ***POWER*** to turn on the VCR.

2 Press ***PROG.***.
The following screen appears on the TV.



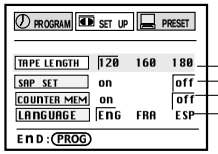
3 Select the language using ***PLAY*** (***CURSOR*** ▲) or ***STOP*** (***CURSOR*** ▼), and press ***PROG.***.
The screen turns to the MENU screen.



4 Press ***PROG.*** to return to the normal TV screen.

Optional settings on the SET UP screen

Other optional settings can be made. Press ***ENTER*** while “SET UP” is selected on the MENU screen. The screen turns to the SET UP screen.



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To change the language, move down here and set to the desired one.

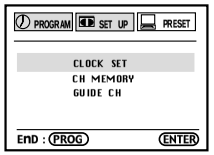
To exit, press ***PROG.*** twice.

Setting the Clock

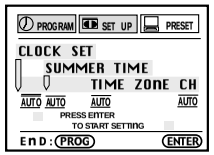
Example: To set the clock to 2:30 p.m. on August 25 (summer time) 2000.

1 Press ***PROG.***.
The MENU screen appears on the TV.

2 Select “PRESET” using ***FF*** (***CURSOR*** ▶) or ***REW*** (***CURSOR*** ◀), and press ***ENTER***.



3 Press ***ENTER*** to select “CLOCK SET”.



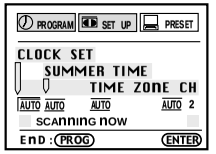
4 Select “AUTO” or “MANU” using ***PLAY*** or ***STOP***.
AUTO: The VCR automatically sets or adjusts the clock.
If you select “AUTO” mode, proceed to step **8**.
MANU: You can set the clock manually.
If you select “MANU” mode, proceed to next step.

5 Vary the digits to set the hour.
PLAY : To increase.
STOP : To decrease.

6 Move to the next using ***FF***
(To move back, press ***REW***.)

7 Repeat step **5** and **6** to set the minutes, month, day, and the year (by the last two digits).
Proceed to step **10** to start the clock.

8 Press ***ENTER*** to start the “AUTO” clock set feature.
After the VCR is turned off, it automatically updates the clock using the data broadcast by the local TV stations.
*The clock is revised by broadcasting signal at 8:00 A.M every morning.



9 Select the options using ***FF*** or ***REW***. Change the data using ***PLAY*** or ***STOP***.

1) Set “SUMMER TIME (Daylight-Saving Time)”.
DST start: Daylight-saving time begins on the first Sunday in April. Because the clock automatically changes from 2:00 AM to 3:00 AM (forward one hour).
DST end: Daylight-saving time ends on the last Sunday in October. The VCR clock automatically changes from 2:00 AM to 1:00 AM (back one hour).
remember that any part of a scheduled Timer Recording that falls between these two times will not be recorded.
AUTO: the VCR is using the clock data Broadcast by the local TV stations.
IN: You want to use the DST function, and you are leaving in the area that apply Daylight-saving time.
OUT: You are not leaving in the area that apply Daylight-saving time and you do not want to use DST function.

2) Set “TIME ZONE”.
If you select “AUTO” for your time zone, the VCR sets the clock using the first Coordinated Universal Time information it finds. If the time is not correct, select another time zone or use the “MANU” option.

3) Set “CLOCK DATA CH”.
If you don't know the clock data channel, select “AUTO”. The VCR will scan automatically to tune the channel carrying the clock data.

If AUTO CLOCK SET is unsuccessful, set the time and date through the “MANU” clock set menu selection.

10 Press ***PROG.***.
Now the clock starts.

Storing Channels on the VCR

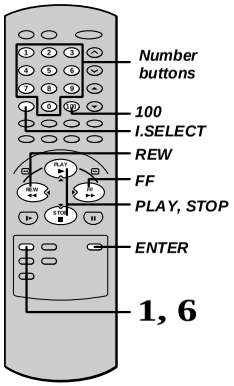
This section is required if you receive only normal TV or unscrambled cable channels, or use a cable box between your TV and the VCR.

Incoming Antenna/Cable(CATV) Signals

The VCR scans through all receivable TV and CATV channels and stores only the active ones in your area into the memory. Once the storing is finished, you can select a desired channel using ***CH/TRK***.

Preparation

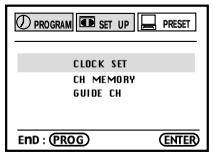
- Turn on the TV, and select the video channel (3 or 4), or the video input mode if you made the Audio/Video connection (page 11).
- Press ***I.SELECT*** so that the channel number will appear if "L1" or "L2" is displayed in the VCR display.



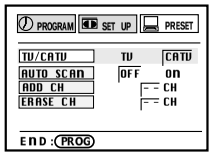
Incoming Antenna/Cable(CATV) Signals

1 Press ***PROG***. to display the MENU screen.

2 Select "PRESET" using ***FF*** or ***REW***, and press ***ENTER***.



3 Select "CH MEMORY" using ***PLAY*** or ***STOP***, and press ***ENTER***.



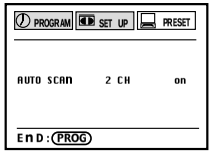
4 Set "TV/CATV" to "TV" or "CATV" using ***FF*** or ***REW***.

TV: To store channels received via the antenna.

CATV: To store channels received via the incoming cable.

5 Select "AUTO SCAN" using ***PLAY*** or ***STOP***, and press ***FF*** to set to "ON".

The VCR starts scanning and the channels are stored in the VCR in ascending order. When the scanning is finished, the screen automatically returns.



6 Press ***PROG.*** three times to exit.

Adding or erasing channels

Adding channels

If a desired channel cannot be scanned automatically because of a weak signal, it can be added to the memory.

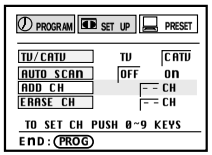
Erasing channels

You can erase a stored channel from the memory if it is unnecessary.

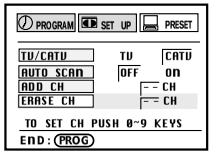
1) Follow steps **1** to **3** of "Incoming Antenna/CATV Signals".

2) Select "ADD CH" or "ERASE CH" using ***PLAY*** or ***STOP***.

To add channels



To erase channels



3) Enter a channel number of 1 to 125 using ***number buttons***.

For more than 100 number, first press ***100***.

For CATV channels, refer to the chart below. (For other orders, check with your cable company.)

4) Repeat steps **2)** and **3)** to add or erase channels as necessary.

5) Press ***PROG.*** three times to exit.

Selecting stored channels

Once the active channels have been stored, you can select the channels in two ways below.

Number buttons

To enter digits of the channel number.

- For one-digit number, enter 0 before.
- For more than 100 number, first press 100.
- Each *number button* needs to be pressed within 2 seconds.

CH/TRK buttons

To shift up or down the stored channel numbers.

Channel reference chart

Number on the VCR / Corresponding channel number	CH NUMBER / TV / CATV STD (HRC/IRC)																			
	1	2	3	4	5	6	7	8	9											
	–	2	3	4	5	6	7	8	9											
	1(A-8)	2	3	4	5(A-7)	6(A-6)	7	8	9											
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
10	11	12	13	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
R	S	T	U	V	W	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO
52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	···
52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	–	–	···
PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	65	66	67	68	69	70	71	···
93	94	95	96	97	98	99	100	101	102	103	···	121	122	123	124	125				
–	–	–	–	–	–	–	–	–	–	–	···	–	–	–	–	–				
93	94	A-5	A-4	A-3	A-2	A-1	100	101	102	103	···	121	122	123	124	125				

CATV signals

- STD (standard) cable TV signals
- HRC (Harmonic Related Carriers) cable TV signals
- IRC (Incremental Related Carriers) cable TV signals

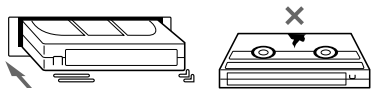
  IRC is also called ICC (Incremental Coherent Carriers)

Video Cassette Use

Video Cassette Use

Loading a cassette

Push the cassette into the cassette compartment with the window side facing up and the label side towards the front. The VCR is automatically turned on. The indicator will appear in the VCR display.



Ejecting a cassette

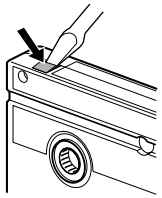
Press ***EJECT.*** The cassette is ejected from the cassette compartment.

> **Warning**
> Do not insert your hands or any foreign objects into the compartment. This may result in injury or damage. Take special care with children to avoid accidents.

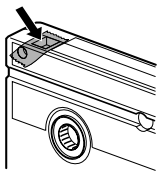
Precautions when using video cassettes

Video cassettes have a safety tab to prevent accidental erasure. If the tab has already been removed, recording cannot be performed.

To prevent accidental erasure
Remove this safety tab with a screwdriver.



To record again
Cover the tab hole with adhesive tape.

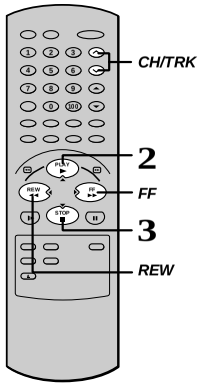


- Avoid exposing cassettes to direct sunlight. Keep them away from heaters. Avoid extreme humidity, vibrations or shock, strong magnetic fields (near a motor, transformer or magnet) and dusty place.

Playback

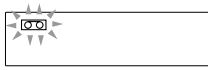
This section explains the basic playback operation.

Preparation
- Select the video channel (3 or 4) or video input mode on the TV.
- Press VCR to set the remote control operating the VCR.



Basic Playback

1 Load a recorded cassette.
Power is turned on.
If the cassette has no safety tab, playback starts automatically.



2 Press ***PLAY*** to start playback.

3 To stop playback, press ***STOP***.

Double Speed Playback

1 Press ***PLAY*** during playback.
A tape runs at double speed playback.

To resume normal playback
Press ***PLAY*** again

Rewinding / Fast-forwarding
Press ***REW*** or ***FF*** in the stop mode.

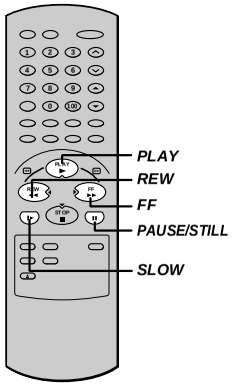
Adjusting the tracking

When playback starts, the VCR automatically adjusts the tracking for clear pictures and sound (Digital Auto Tracking).
If the VCR cannot locate the best possible tracking point, hold down one of ***CH/TRK*** to adjust the tracking manually.

Notes
- During the adjusting, the playback picture and sound may be distorted.
- The digital auto tracking is activated only in the playback mode.
- The noise on the screen may not be completely eliminated depending on the tape used, especially when the tape was recorded on another VCR.

Variable Speed Playback

You can play back a tape at various tape speeds.



Picture Search

A tape runs at 5 times or 7 times the normal playback speed so that you can quickly locate a particular scene.

1 Press ***FF*** or ***REW*** during playback.
The tape runs at 5 times the normal playback speed.

2 To change the tape speed to 7 times the normal playback speed, press and hold ***FF*** or ***REW***.
If you release it, the tape speed returns to 5 times.

Note
If you press *FF* or *REW* during picture search, the mode changes to fast-forwarding or rewinding.

To resume normal playback

Press ***PLAY***.

Still Picture

A picture freezes so that you can watch closer.

1 Press ***PAUSE/STILL*** during playback.
The picture freezes.

To resume normal playback

Press ***PAUSE/STILL*** again.

Notes
- The still mode is automatically cancelled after about 5 minutes and returns to normal playback.
- The still picture may shake if a picture of a fast-moving object or scene is frozen. This is not a defect in the unit.

Adjusting Still Picture Stability

If the still picture is distorted or flickers, hold down one of ***CH/TRK*** until the picture becomes stable.

Note
The distortion of the still picture may not be eliminated completely.

Frame Advance

A picture advances frame by frame.

1 Press ***PLAY*** during still playback.
Each time you press ***PLAY***, the picture advances one frame.

To resume normal playback

Press ***PAUSE/STILL.***

Slow-motion Picture

The tape runs at 1/7th or 1/15th the normal playback speed.

1 Press ***SLOW*** during playback.
The tape runs at about 1/7th the normal playback speed.
Each time you press ***SLOW***, the speed alternates between 1/7th and 1/15th.

To resume normal playback

Press ***PLAY.***

Notes
- The slow-motion picture mode is automatically cancelled after about 5 minutes and returns to normal playback.
- The slow-motion picture may flicker up and down. This is not a defect in the unit.

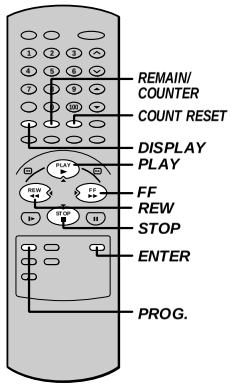
Adjusting the Tracking Manually

If the slow-motion picture is noisy, hold down one of ***CH/TRK*** until the best picture is obtained.

Note
The noise in the slow-motion picture may not be eliminated completely.

Useful Functions in Tape Operation

These functions will help your playback.



Counter Function

You can view the clock, linear time counter or tape remaining time in the VCR display or on the TV screen.

Each time you press ***REMAIN/COUNTER***, the VCR display changes in sequence as follows:

→ Linear time counter → Tape remaining time (RT) → Clock →

The indication above will also appear on the TV screen by pressing ***DISPLAY***. They are switchable with ***REMAIN/COUNTER***.

To reset the linear time counter to "0:00:00"

The counter is automatically reset to "0:00:00" when a cassette is ejected. If you want to reset at another point, such as the beginning of a new recording, just press ***COUNT RESET***.

Notes

- The linear time counter does not work on non-recorded portions on the tape.
- When the tape is ejected or the VCR is turned off, the display changes to clock.
- If the tape rewinds back over "0:00:00", "–" appears in the VCR display.
- The displayed time of the linear time counter is only an approximation.

Tape Remaining Time

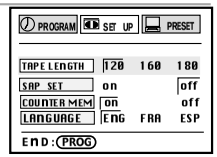
To view the tape remaining time in the VCR display, select the tape length beforehand.

1 Turn on the VCR and load a cassette.

2 Press ***PROG.*** to display the MENU screen.

3 Select "SET UP" using ***FF*** or ***REW***, and press ***ENTER***.

4 Select the length of the tape, using ***FF*** or ***REW***.
T120: for a T-120 tape or shorter
T160: for a T-140 or T-160 tape
T180: for a T-180 tape

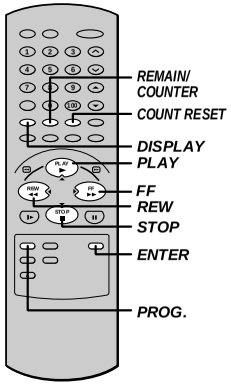


5 Press ***PROG***. twice to exit.

6 Press ***REMAIN/COUNTER***.
The remaining time ("RT - : - -") appears in the VCR display.

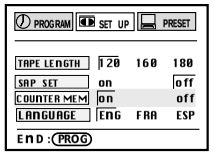
Notes

- The displayed remaining time is an approximation.
- The remaining time is calculated according to the tape speed (SP or SLP) and the cassette type.



Memory Stop Feature (Zero Return)

1 On the SET UP screen, select "COUNTER MEM." using ***PLAY*** or ***STOP***, and set to "ON" using ***REW*** or ***FF***.



2 Press ***PROG.*** twice to exit.

The memory-stop feature allows you to quickly return to a counter reading of "0H00M00S" from any point on the tape. Memory stop is automatically turned on whenever the time counter with memory is displayed on the TV screen. This is convenient when you want to watch a segment of the tape repeatedly. You may also discover other useful application for this feature.

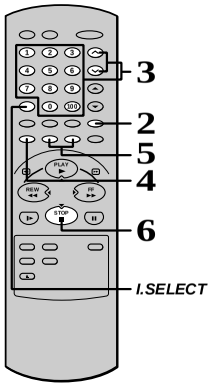
Notes: If you are rewinding the tape and the VCR stops at "0H00M00S M", press ***REW*** again to continue rewinding.

If you press the ***FF*** (fast-forward) button and the time counter never reaches "0H00M00S M" between that point and the end of the tape, the VCR will continue to fastforward to the end of the tape.

Recording a TV Program

This section explains the basic recording operation.

Preparation
- Select the video channel (3 or 4) or video input mode on the TV.
- If you record cable channels via the cable box, finish the cable box set-up (pages 12), and turn on the cable box.

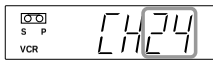


Basic Recording

1 Load a cassette with the safety tab attached.

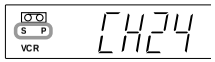
2 Press ***TV/VCR*** so that the "VCR" indicator appears in the VCR display.

3 Select a channel to record with ***CHANNEL*** on the VCR, or ***CH/TRK*** or **number buttons** on the remote control.



If you see "L1" or "L2" in the VCR display, press ***I.SELECT*** so that the channel number appears.
- If you record cable channels via the cable box, make the output channel number of the cable box or "L1" appear, depending on your connection. (See pages 11 – 12.)

4 Press ***SP/SLP*** to select the recording tape speed.

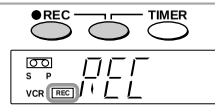


SP: Suitable for general recording with better picture and sound quality.

SLP: Suitable for tripling recording time, but with less picture and sound quality than using the SP tape speed.

5 Press ***REC*** on the VCR, or simultaneously press both ***REC*** on the remote control.

Recording starts.



6 Press ***STOP*** to stop recording.

To record from other connected equipment
In step **3**, press ***I.SELECT*** to switch the display as follows:
L1: To record via the LINE IN 1 jacks on the rear panel.
L2: To record via the LINE IN 2 jacks on the front panel.

Watching a TV program while recording another

1) While recording, press ***TV/VCR*** to turn off "VCR" indicator.

2) Choose another channel using the channel selector on the TV.

Skipping unnecessary scenes while recording

Press ***PAUSE/STILL*** to stop recording momentarily. To resume recording, press ***PAUSE/STILL*** again.

Note
The VCR automatically shifts to the stop mode if the recording pause mode continues for 10 minutes.

Recording off time setting

By setting the recording off time, the recording stops and the VCR is turned off automatically.

While recording, press simultaneously both ***REC*** on the remote repeatedly to set the desired off time.

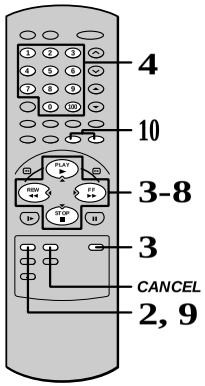
Each time you press *REC*, each half-hour up to about 4 hours appear cyclically.

Notes
- To cancel the recording in progress, press ***POWER*** *on the VCR.*

Timer Program Recording

The programmable timer allows you to record up to 6 different programs over one month.

Preparation
- Select the video channel (3 or 4) or video input mode on the TV.
- Make sure that the clock is set correctly (page 15).
- Store the channels on the VCR (pages 16 and 17).
- If you record cable channels, finish the cable box set-up (pages 12), and turn on the cable box.



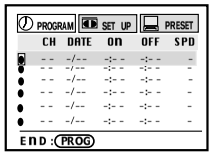
Timer Programming Procedure

Example: To record cable channel 25 in the SP tape speed from 9:30 p.m. until 10:00 p.m. on August 30. Today is August 25.

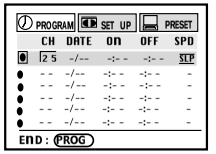
1 Load a cassette with the safety tab attached.

2 Press ***PROG***. to display the MENU screen.

3 Select "PROGRAM" using ***FF*** or ***REW***, and press ***ENTER***.



4 Move to the next using ***FF***, and select the channel number 25 by pressing ***number buttons*** 2 and 5, ***PLAY*** or ***STOP.***



- To record a cable program from the connected cable box:
  Enter the cable channel number by ***number buttons***, ***PLAY*** or ***STOP.***
  If your cable box is not remote-controllable, choose the desired channel (1 to 125) on the cable box.

To make corrections:
Press ***REW*** to move back to the item, or ***FF*** to forward.

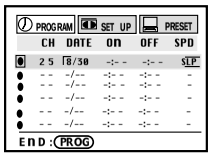
(Continued)

Timer Program Recording (continued)

5 Move to the next using ***FF***, and set the recording date using ***PLAY*** or ***STOP.***

The date changes as follows:

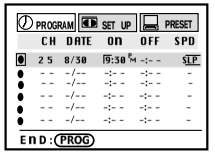
→ 8/25 → 9/25 → ··· → 7/25 → WKLYSU → ··· → MO~FR ← WKLYSA ←



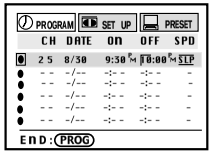
[WKLYSU]···[WKLYSA]: You can record TV programs on the same channel on the day and time every week.

[MO~FR]: You can record TV programs on the same channel on the day and time Monday through Friday.

6 Move to the next using ***FF***, and set the hour and minutes of the recording start time.



7 Move to the next, and set the recording off time.

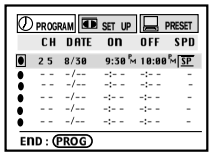


8 Move to the next, and select the tape speed (SP) using ***PLAY*** or ***STOP.***

For the tape speed "AUTO (Auto Speed Select)", see below.

To set another program, press ***FF***, and select the next line pressing ***STOP.***

Repeat steps **4** to **8.**



9 Press ***PROG.***.

Now programming is completed.

10 Press both ***TIMER*** simultaneously.

The power turns off and the VCR enters the timer standby mode.

Auto Speed Select

If you are not sure the tape is long enough for timer program recording in the SP tape speed, set the recording tape speed to "AUTO".

Recording starts in the SP tape speed and the VCR automatically selects the tape speed to record the program to the end. If the tape length is not long enough, the tape speed automatically changes from SP to SLP.

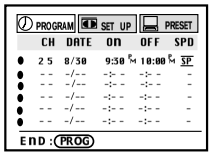
Notes

- Make sure that the tape length is selected correctly according to the tape used on the SET UP screen .
- When the SLP tape speed is selected and the tape length is not sufficient to record the program to the end, the program cannot be recorded to the end.
- The picture will be distorted when playing the part where the recording tape speed is switched from SP to SLP with the Auto Speed Select feature.

Confirming the timer programs

Press *PROG* while timer recording.

The screen for confirming will appear.



This screen can be sure only in the Timer Recording mode.

Changing / cancelling the timer programs

1) If the TIMER indicator is lit, turn the VCR on by pressing ***POWER.***
2) With steps **2** to **9**, change the items.
   To cancel a program, select the program you want to cancel in step **4**, and press ***CANCEL.*** The line is then cleared.
3) Press ***POWER*** to return to the timer standby mode.

Error indication

The blinking "TIMER" indicator appears in the VCR display if you press both ***TIMER*** when:

— a cassette is not loaded.

— the loaded cassette has no safety tab.

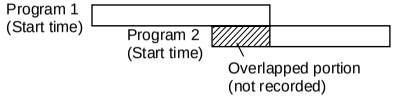
In these cases, a recording can not be made.

If a power failure occurs during the timer program recording

- When a power failure has occurred, "- -:- -" appears in the VCR display. Since the programmed contents have been cleared, reset the clock and timer programming.
- When power has failed for a short time, the colon of the current time display blinks. The programmed contents are not affected. Reset the clock.

Overlaps of the programs

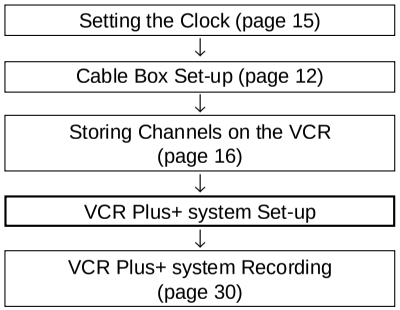
If two timer programs overlap, the recording start time of program 1 has priority over the recording off time of program 2.



VCR Plus+ system Set-up

VCR Plus+ system is a timer recording system for an easier programming that requires you only to enter a PlusCode® programming assigned to a desired program. This section explains the necessary set-up to make VCR Plus+ system recordings.

The flow chart below will give you an idea as to what must be done to use the VCR Plus+ system feature.


Setting the Clock (page 15)
Cable Box Set-up (page 12)
Storing Channels on the VCR (page 16)
VCR Plus+ system Set-up
VCR Plus+ system Recording (page 30)

* With the VCR Plus+ system, this video cassette recorder can automatically select the appropriate channel on your compatible cable box or satellite receiver. VCR Plus+ and PlusCode are registered trademarks of Gemstar Development Corporation. The VCR PLus+ system is manufactured under license from Gemstar Development Corporation.

You must give the VCR the special numbers for guide channels (also called VCR Plus+ system channel numbers) assigned to each channel that you receive in your home. The VCR identifies the channel to be recorded by the guide channel number you enter.

The guide channel numbers are published in TV guide magazine, selected local TV publications, or the channel guide from cable company. If you cannot find the numbers, call Gemstar's customer service department at 1-800-4321-VCR.

Sample of a Guide channel chart from a local TV listing

VCR Plus+ SYSTEM CHANNEL NUMBERS

Broadcast channels	Assigned channels	Cable channels	Assigned channels
3 KCRA (NBC)	3	A & E	39
6 KVIE (PBS)	6	AMC	35
10 KXTV (CBS)	10	BET	57
13 KOVR (ABC)	13	BRAV	54
19 KCSO (SPAN)	19	CMTV	14
31 KRBK (IND)	31	CNBC	23
40 KTXL (FOX)	40	CNN	42
58 KSCH (IND)	25	C-SPAN	28
44 KBHK (IND)	15	CUNY	29
24 KCPM (NBC)	24	DIS	53
4 KRNV (NBC)	28	ESPN	34
42 KFCB (IND)	27	FAM	47
7 KGO (ABC)	28	HBO	33

Sample of a Channel line-up chart from a cable-TV company

CHANNEL LINE-UP CHART

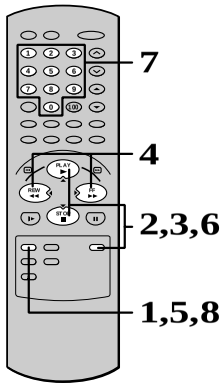
Channel 2	ME/U
Channel 3	8 WISH
Channel 4	4 WTTV
Channel 5	6 WRTV
Channel 6	VCA/Local origination
Channel 7	HOME BOX OFFICE
Channel 8	A.P News Plus
Channel 9	9 WGN.

Preparation

- Select the video channel (3 or 4) or video input mode on the TV.
- If you record cable channels, finish the cable box set-up (pages 12).
- Prepare the list like below.

Example

Station	Guide channel number (on the TV Guide, local TV listings etc.)	Your home channel number (on the channel line-up chart supplied by cable companies)
HBO	33	7
ESPN	34	
AMC	35	



Guide Channel Setting

1 Press ***PROG.***.

2 Select "PRESET" using ***FF*** or ***REW***, and press ***ENTER.***

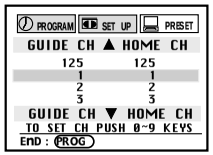
3 Select "CH MEMORY" using ***PLAY*** or ***STOP***, and press ***ENTER.***

4 Set "TV/CATV" to "TV" or "CATV" using ***FF*** or ***REW.***

5 Press ***PROG.*** to return to the PRESET screen.

6 Select "GUIDE CH" using ***PLAY*** or ***STOP***, and press ***ENTER***.

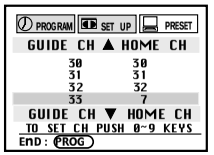
(the case of CATV mode)



7 Enter channel numbers on the right of the guide channel numbers.

Find a guide number you marked on the list using ***PLAY*** or ***STOP***, and enter the corresponding home channel number if necessary by using **number buttons.**

Example: To enter home channel number 7 (HBO) with guide channel number 33 assigned.



In some areas, one channel may be assigned more than one guide channel number. In this case, enter the home channel number to each of the guide channel numbers.

8 Press ***PROG.*** three times to exit.

The set-up is all over and your VCR Plus+ system recording is now available.

Notes

- When your cable company changes the channel line-up, you must re-do this set-up for the channel.

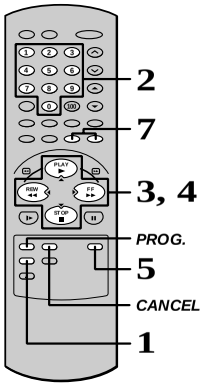
VCR Plus+ system Recording

After performing the VCR Plus+ system set-up, you can easily program a recording simply by entering the PlusCode® programming numbers. The numbers are published in the TV listings of newspapers, TV guide magazine, etc.

Preparation
- Make sure that the clock is set correctly (page 15).
- Load a cassette with a safety tab.

Sample of TV program listing in a TV guide magazine

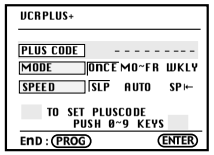
5PM (FAM) **POPEYE — Cartoon** 725692
(HBO) **MAKING OF A CHAMPION** 237945
A look at gymnast and Olympic hopeful Kim Zmeskal from novice to seasoned competitor.
(NIK) **HEY DUDE — Children** (793571) ← PlusCode® programming number
One of Ted's teachers stays at the ranch.
(USA) **MY TWO DADS — Comedy** (586858) ← PlusCode® programming number
5:35 (TBS) **GOOD TIMES — Comedy** 2261858



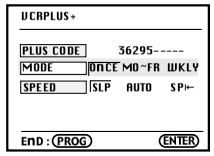
VCR Plus+ system Programming

1 Press ***VCR Plus+***.
The VCR PLUS+ screen appears.

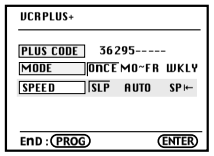
2 Enter a PlusCode.
Example: To record a program with the PlusCode® programming number 36295 (fictitious code).
Press ***number button 3, 6, 2, 9 and 5.***
Confirm that the number is entered correctly.
To correct a mistake, press ***CANCEL*** and enter the correct number.



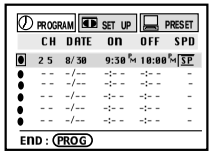
3 Select "MODE" using ***PLAY*** or ***STOP***, and set the recording frequency.
ONCE: To record once.
DAILY(MO~FR): To record programs on the same channel at the same time Monday through Friday.
WKLY: To record programs on the same channel at the same time on the same day every week.



4 Select "SPEED" using ***PLAY*** or ***STOP***, and set the recording tape speed.
For AUTO speed, see page 26.



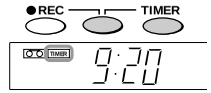
5 Press ***ENTER***.
The program setting is now memorized.
- If your cable box is not remote-controllable, select the recording channel on the cable box beforehand.



6 To set another program, repeat steps **1** to **5**.

7 Press ***PROG.*** now programming is completed.

8 Press both ***TIMER*** simultaneously. The power turns off and the VCR enters the timer stand-by mode.



Confirming the VCR Plus+ system timer programs

Before the VCR enters the timer standby mode (TIMER indicator not lit)
1) Press ***PROG***. to display the MENU screen.
2) Press ***ENTER*** to select "PROGRAM". Check the programmed data.
3) Press ***PROG***. twice to exit.

During the timer recording
1) Press ***PROG.***.
2) The screen for confirming appears.(Check the programed data).
3) Press ***PROG*** to exit.

Cancelling the VCR Plus+ system timer programs

1) If the TIMER indicator is lit, press both ***TIMER*** to turn it off, and turn on the VCR by pressing ***POWER***.
2) Press ***PROG***. to display the MENU screen.
3) Press ***ENTER*** to select "PROGRAM".
4) Select a program which you want to cancel.
5) Press ***CANCEL***. The line is cleared out.
6) Press ***PROG.*** twice to exit.

Recording or playback in the timer standby mode

First press both ***TIMER*** to release the timer standby mode, and then press ***POWER*** to turn on the VCR. The VCR will be available for use.
- Be sure to press both ***TIMER*** again to return the VCR to the timer standby mode after you have finished.

Error indications

If "FULL / CANCEL PROG?" message appears on the TV during programming, no more programs can be entered. If you want to add another, delete one existing program on the screen by using a ***PLAY*** or ***STOP***.

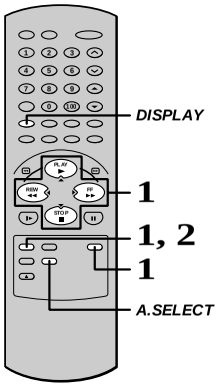
If an incorrect PlusCode® programming number is entered, "ERROR CODE ENTERED" appears on the screen. Press ***CANCEL*** to clear the number and enter correct one.

If "CLASH" message appears on the TV during programming, it tells you that two programs with the same recording start time have been entered. Correct either of the two programs as follows:
1) Select the number of the program to correct by using ***PLAY*** or ***STOP***.
2) Correct the data, or clear out the line by pressing ***CANCEL*** and then press ***VCR Plus+*** to enter a PlusCode®programming number.

MTS Broadcast Compatibility

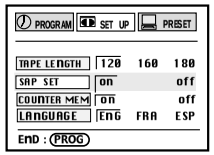
This VCR can receive or record MTS (Multichannel TV Sound) broadcasts. By connecting the VCR to your stereo system or stereo TV, you will experience the SAP or stereo sound.

Preparation
Connect a stereo TV or stereo system to the AUDIO OUT jacks of the VCR.



Recording the SAP/Stereo Broadcast

1 On the SET UP screen (page 14), select "SAP SET" using ***PLAY*** or ***STOP***, and set to "ON" using ***REW*** or ***FF***.



2 Press ***PROG***. twice to exit.

3 Perform a recording.

SAP (Second Audio Program broadcast):
A separate audio program, usually broadcast in a second language with the main language.

Selecting a sound

Sounds recorded on the tape
According to your setting of "SAP SET" on the SET UP screen, the sound is recorded onto different tracks of the tape as below. Set "SAP SET" to "ON" or "OFF" appropriately.

Type of receiving broadcast	Setting of "SAP SET" on the SET UP screen	On-Screen Display (Press ***DISPLAY***.)		Contents of recorded sound		
				Normal sound track (Mono)	Hi-Fi sound track	
		"SAP"	"STEREO"		L	R
Regular (monaural audio)	"ON" or "OFF"	not lit	not lit	MONO	MONO	MONO
Stereo	"ON" or "OFF"	not lit	lit	MONO (MIXED)	STEREO	
Regular+SAP	"ON"	lit	not lit	MONO	MONO	SAP
	"OFF"	lit	not lit	MONO	MONO	MONO
Stereo+SAP	"ON"	lit	lit	MONO	MONO	SAP
	"OFF"	lit	lit	MONO (MIXED)	STEREO	

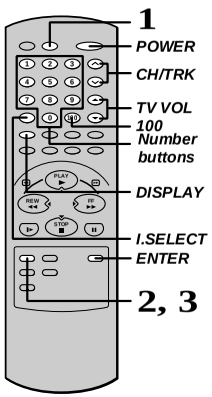
Sounds in playback
You can play SAP and/or stereo broadcasts with this VCR. Press ***A.SELECT*** to select a desired sound.

Desired sound	L , R indicators in the VCR display	Sound output
SAP sound	R (right) is on.	SAP
Stereo sound	Both R (right) and L (left) are on.	Stereo

Note
When the TV is connected to the RF OUT terminal of the VCR, the output sound is monaural.

Multi Brand Remote Control

The remote control can be compatible with various brands of TV by setting their control codes. The TOSHIBA code has initially been set to control TOSHIBA TVs.



Setting Control Codes

1 Press ***TV*** to set the remote control operating your TV.

2 While holding down ***PROG***. enter the two digits of your TV's brand code (listed on page 34) using ***number buttons***.

3 Release ***PROG***.

4 Point the remote control at your TV and use each button listed below to make sure that your TV is operated correctly.

POWER	To turn the TV on or off.
CH/TRK	To select TV channels in the upper or lower direction.
TV VOL	To adjust TV sound level.
I.SELECT	To select an external source such as a VCR.
Number buttons	To select TV channels. When selecting channels 1 to 9, first enter 0 and then the desired number.
100	To substitute for 100 channel key.
DISPLAY	To turn on or off TV's screen display.
ENTER	To use for the TV's ENTER key.

Important
Some TVs may not respond to all the operations above, or may not be operated at all with this remote control. In this case, operate your TV with its own remote control.

Notes
- For some brands, several control codes (brand codes) are allocated. Try each of them until the buttons work on your TV.
- If you replace the remote control's batteries, set the brand code again.

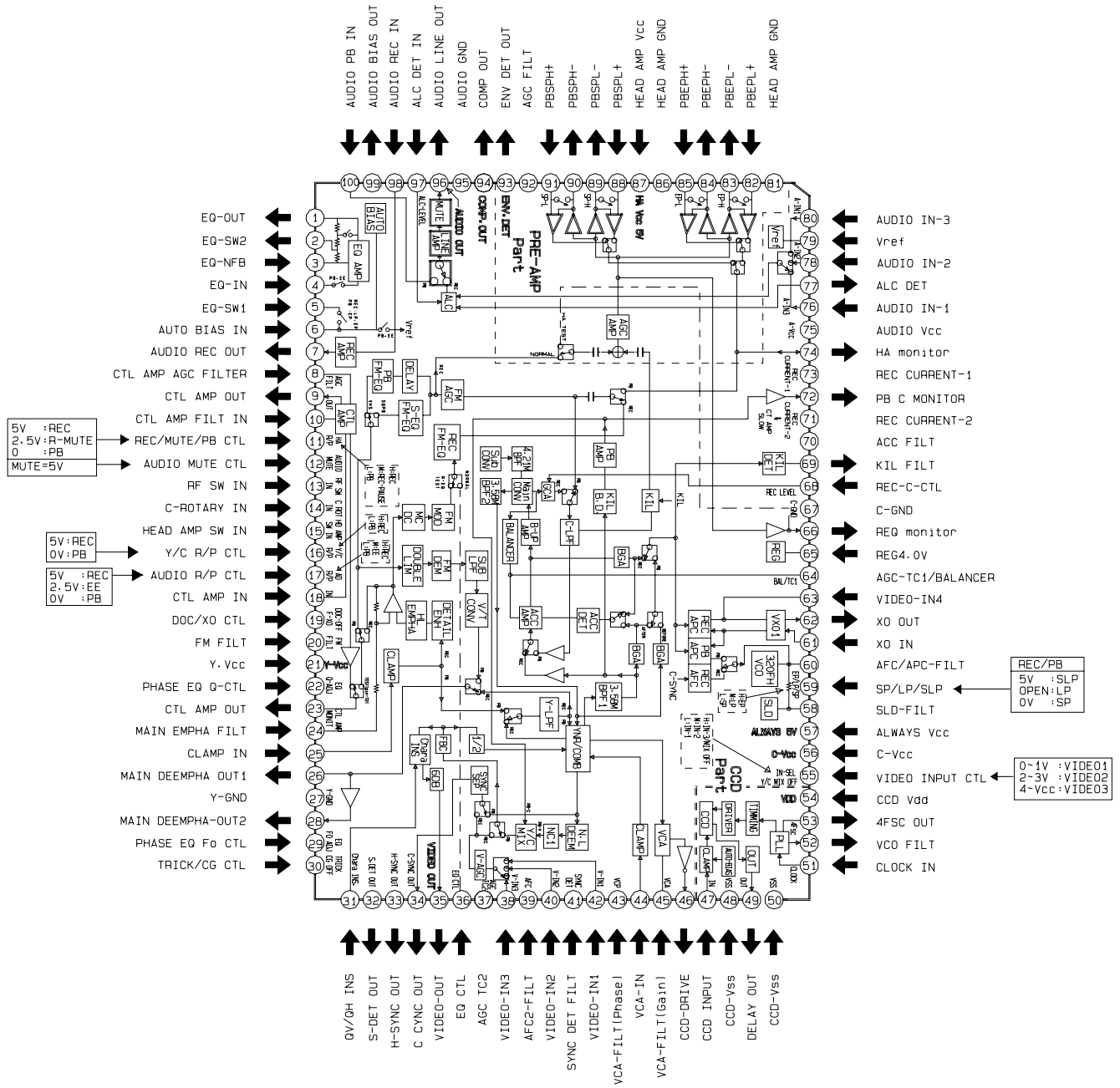
Table of Brand Codes

Brand name of your TV	Brand Code
Toshiba	01
Bell & Howell	09
Carver	10
Celebrity	03
Citizen	12
Curtis Mathes	09, 12
Dumont	14
Electro band	03
Emerson	09, 11
Fisher	09
GE	02, 07, 11
Gibralter	14
Goldstar	11
Hallmark	11
Hitachi	06
Infinity	10
JBL	10
JCB	03
JVC	05
LXI	01, 02, 09, 10, 11
Magnavox	10
Marantz	10
Megatron	06, 11
Memorex	04, 09, 11
MGA	04, 11
Midland	02, 07, 14
Mitsubishi	04, 11
Motorola	08
MTC	12
NAD	01, 11
Nikko	11
Optimus	09
Optonica	08
Panasonic	07, 10, 15
Penney	01, 02, 07, 11, 12
Philco	10
Philips	10
Princeclub	12
Prism	07
Proscan	02
Proton	11

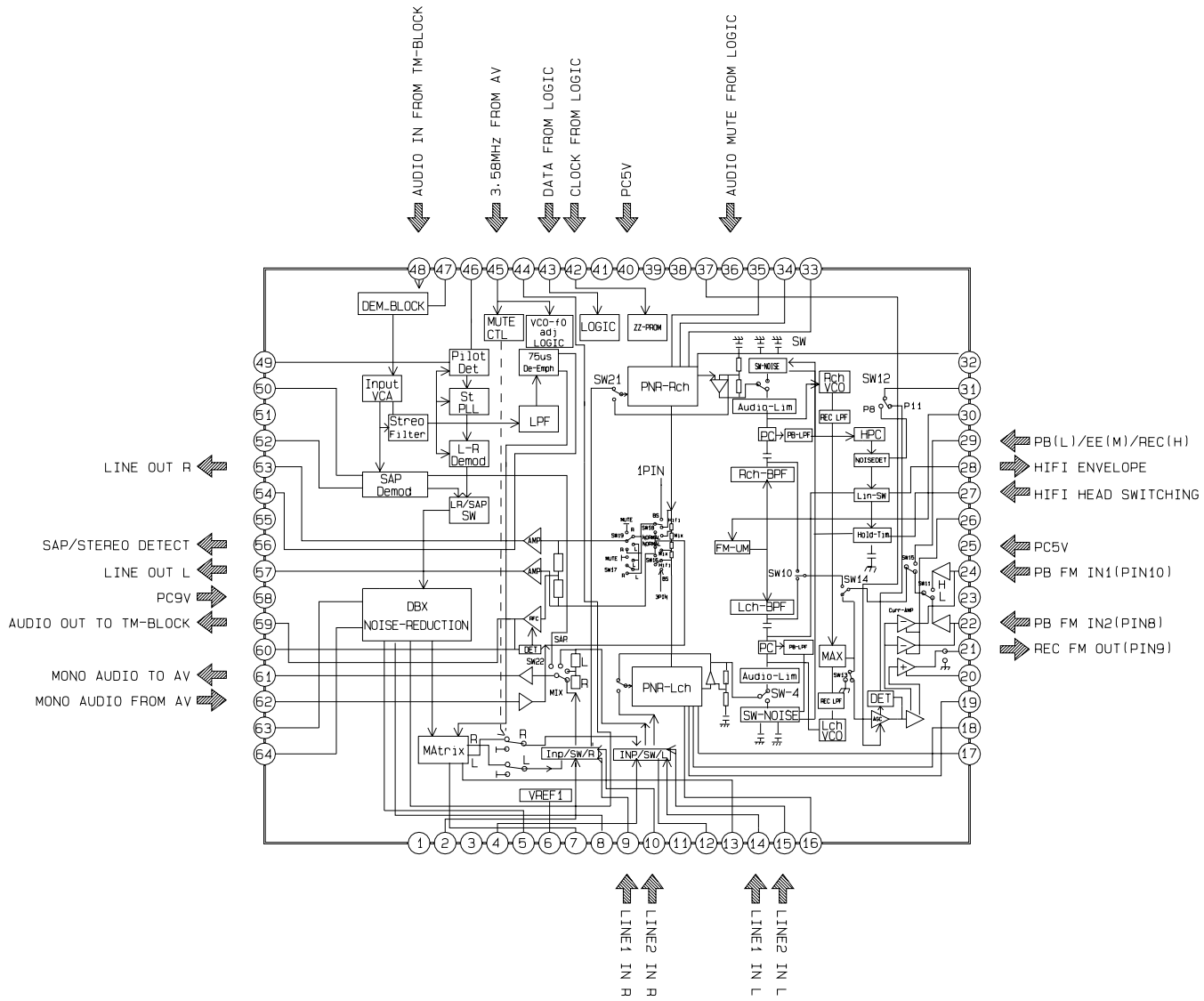
Brand name of your TV	Brand Code
Pulser	14
Quasar	07, 15
Radio Shack	13
RCA	02
Realistic	09, 11, 13
Runco (NEC)	14
Samsung	11, 12
Sanyo	09
Scotch	11
Scott	11
Sears	01, 02, 09, 10, 11
Sharp	08, 13
Sony	03
Soundesign	11
Supreme	03
Sylvania	10
Tandy	08
Technics	07, 15
Techwood	07
Teknika	04, 10, 12
TMK	11
Victor	05
Vidikron	10
Vidtech	11
Wards	10, 11, 13
Zenith	14

2-2 IC Blocks

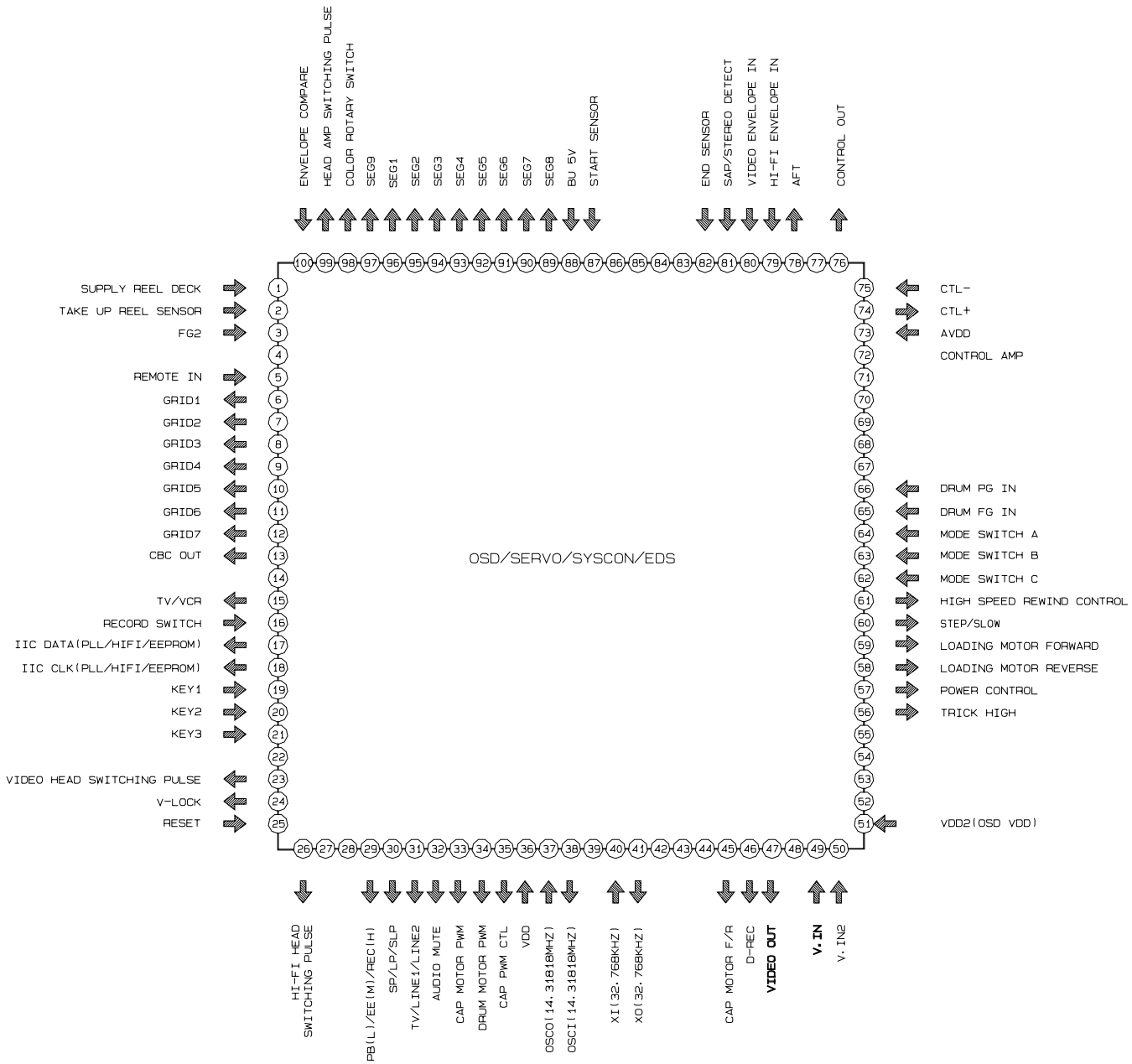
2-2-1 IC301 (LA71072M)



2-2-2 IC501 (AN3662)



2-2-3 IC601 (MN101D02X)



3. Product Specifications

Specifications and features are subject to change without notice.

OPERATION	DESCRIPTION
Power supply	120V AC, 60Hz
Power consumption	18W
External dimensions	430 x 94 x 252 mm (W.H.D)
Mass	3.0 kg
Channels received	VHF : Channels 2-13 UHF : Channels 14-69 CATV : Channels A7-A1, A-CC, 66-125
Antenna input/output terminals	UHF/VHF : 75ohm F type connector
Signal system	Standard NTSC
Recording/Playback system	Recording : VHS format (SP, SLP) Playback : VHS format (SP, LP, SLP)
Cassette	Video cassette with VHS mark
Tape speed	SLP : 11.1 mm/s, SP : 33.4 mm/s
Video recording/Playback time	SLP : 480 minutes, SP : 160 minutes (When T-160 video cassette is used.)
Fast forward/Rewind time	Within approx. 120 s (When T-120 video cassette is used.)
Video input	1V(p-p), 75 ohm, unbalanced, negative sync., pin jack
Video output	1V(p-p), 75 ohm, unbalanced, negative sync., pin jack
Audio input	Line input : 308 mV(rms), more than 47 Kohm, pin jack
Audio output	Line input : 308 mV(rms), more than 47 Kohm, pin jack
Audio frequency range(Hi-Fi)	20Hz - 20KHz
Audio dynamic range(Hi-Fi)	68dB
Utilization conditions	Temperature : 5°C to 40°C Humidity : less than RH 80%

4. Disassembly and Reassembly

4-1 Cabinet Assembly

4-1-1 Cabinet Top Removal

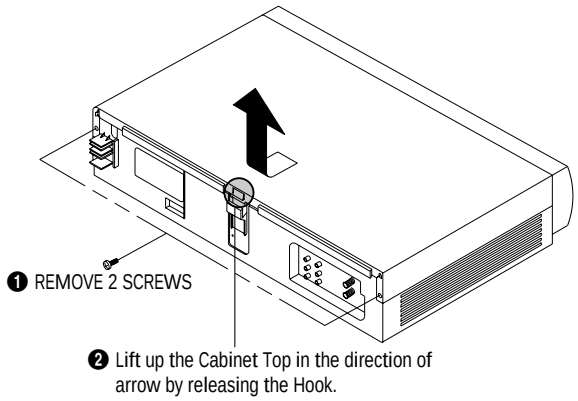


Fig. 4-1 Cabinet Top Removal

4-1-2 Ass'y Front Panel Removal

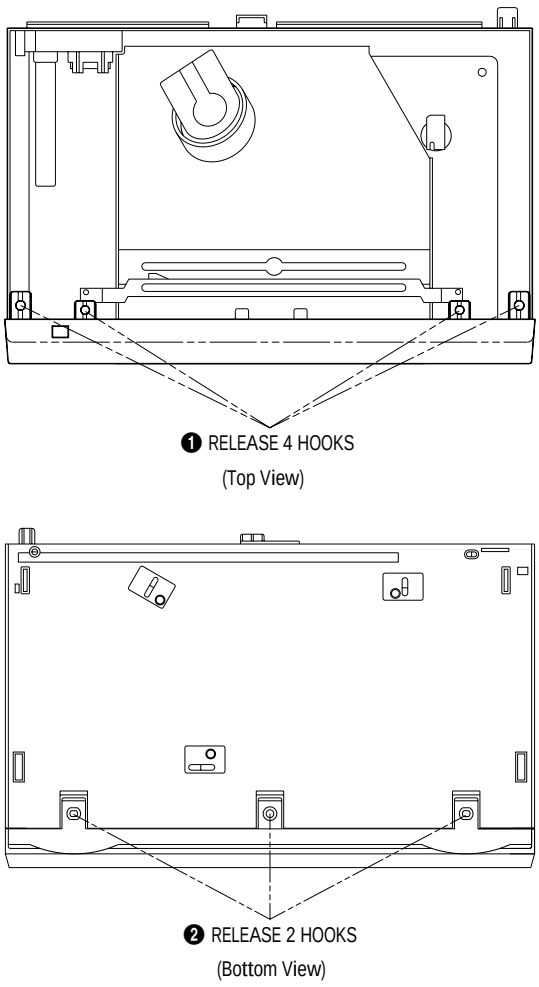


Fig. 4-2 Ass'y Front Panel Removal

4-1-3 Jack PCB/Key PCB Removal

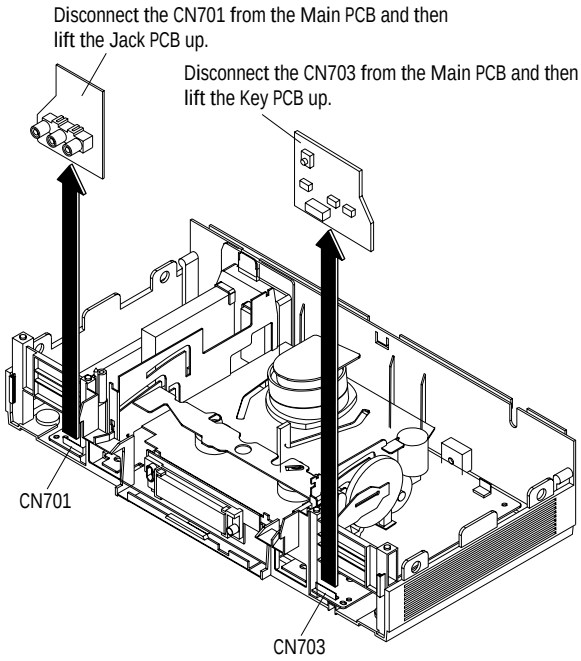

Disconnect the CN701 from the Main PCB and then lift the Jack PCB up.
Disconnect the CN703 from the Main PCB and then lift the Key PCB up.
CN701
CN703

Fig. 4-3 Jack PCB/Key PCB Removal

4-1-4 Chassis Removal

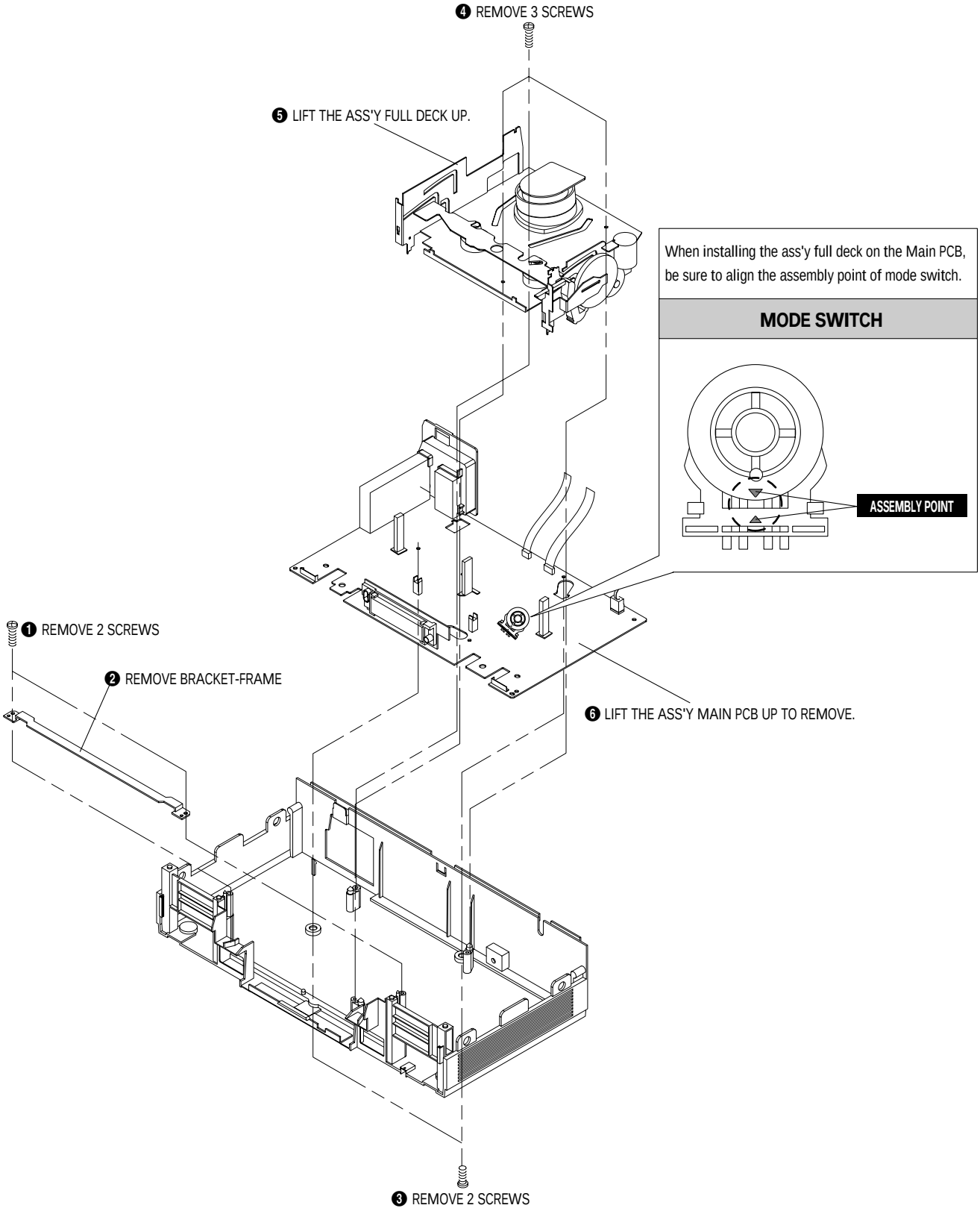

❹ REMOVE 3 SCREWS
❺ LIFT THE ASS'Y FULL DECK UP.
When installing the ass'y full deck on the Main PCB, be sure to align the assembly point of mode switch.
MODE SWITCH
ASSEMBLY POINT
❶ REMOVE 2 SCREWS
❷ REMOVE BRACKET-FRAME
❻ LIFT THE ASS'Y MAIN PCB UP TO REMOVE.
❸ REMOVE 2 SCREWS

Fig. 4-4 Chassis Removal

4-2 Deck Parts Locations

4-2-1 Top View

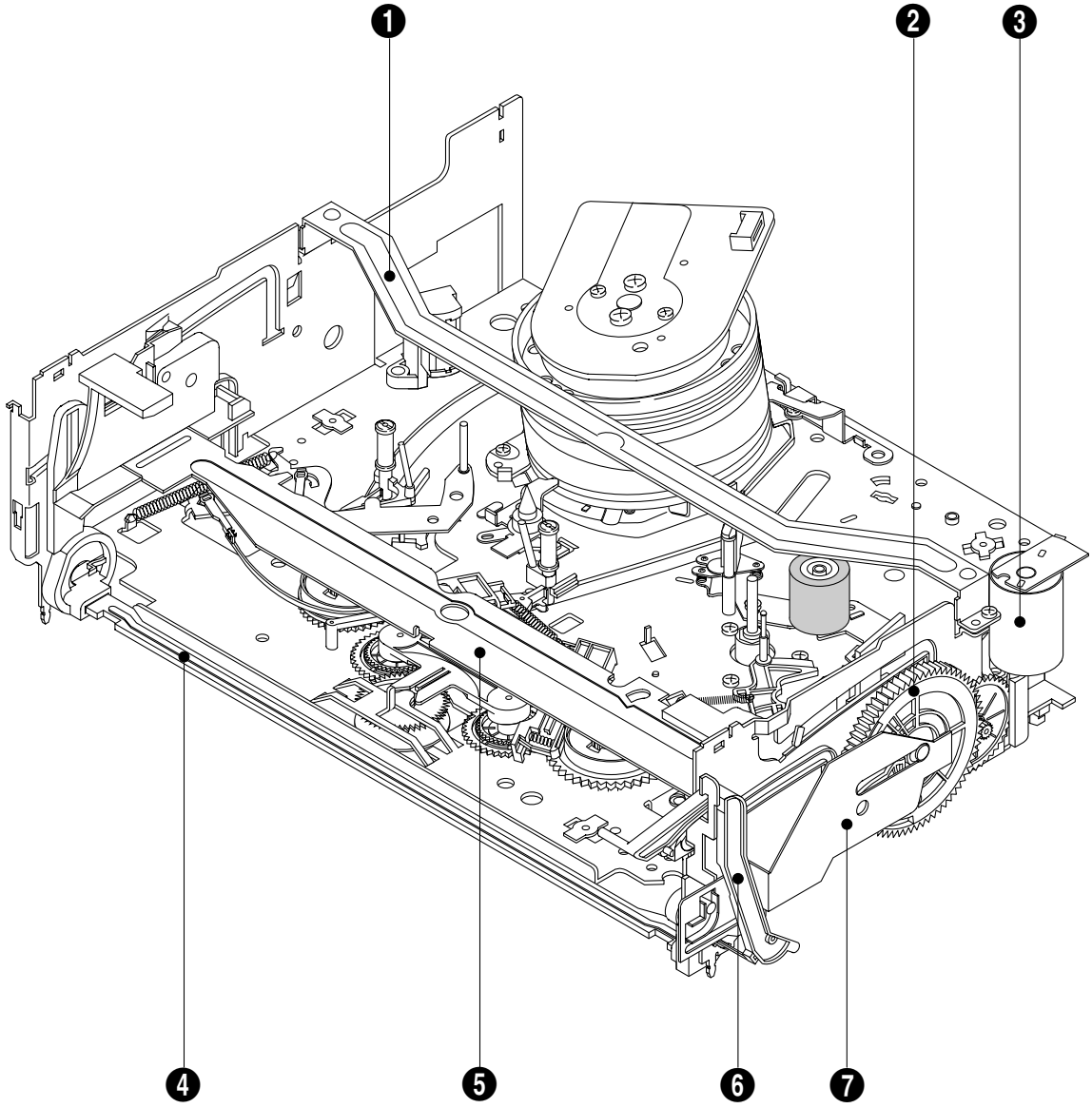


Fig. 4-5 Top parts Location-1

1. BRACKET FL TOP (Optional)
2. GEAR FL CAM
3. MOTOR LOADING ASS'Y
4. LEVER FL ARM ASS'Y
5. HOLDER FL CASSETTE ASS'Y
6. LEVER FL DOOR
7. SLIDER FL DRIVE

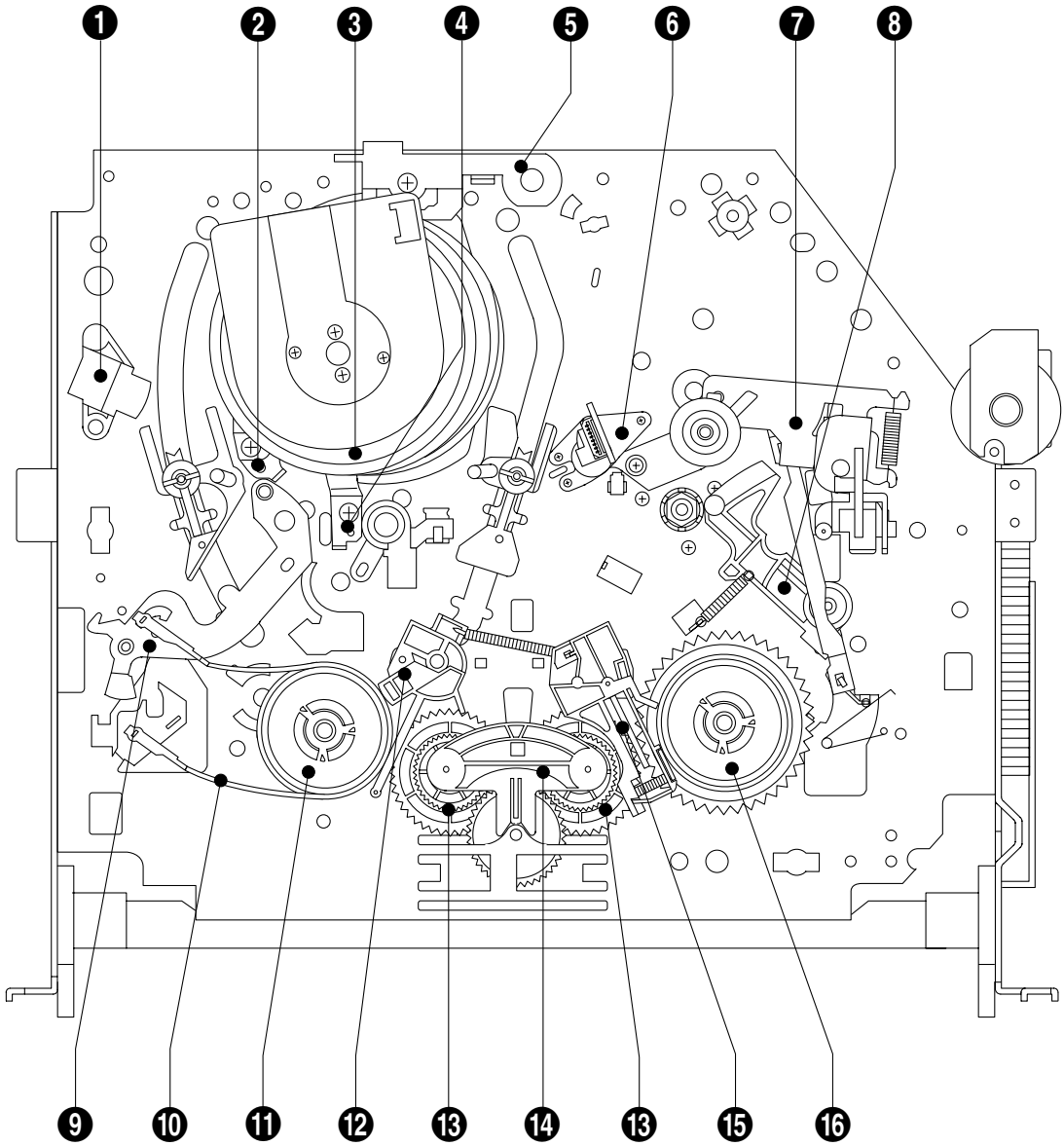


Fig. 4-6 Top Parts Location-2

1. FE HEAD
2. PLATE CYLINDER C
3. CYLINDER ASS'Y
4. PLATE CYLINDER B
5. PLATE CYLINDER A
6. ACE HEAD ASS'Y
7. UNIT PINCH ASS'Y
8. LEVER #9 GUIDE ASS'Y
9. LEVER TENSION ASS'Y
10. BAND BRAKE ASS'Y
11. DISK S REEL
12. LEVER S BRAKE ASS'Y
13. GEAR IDLE
14. LEVER IDLE
15. LEVER T BRAKE ASS'Y
16. DISK T REEL

4-2-2 Bottom View

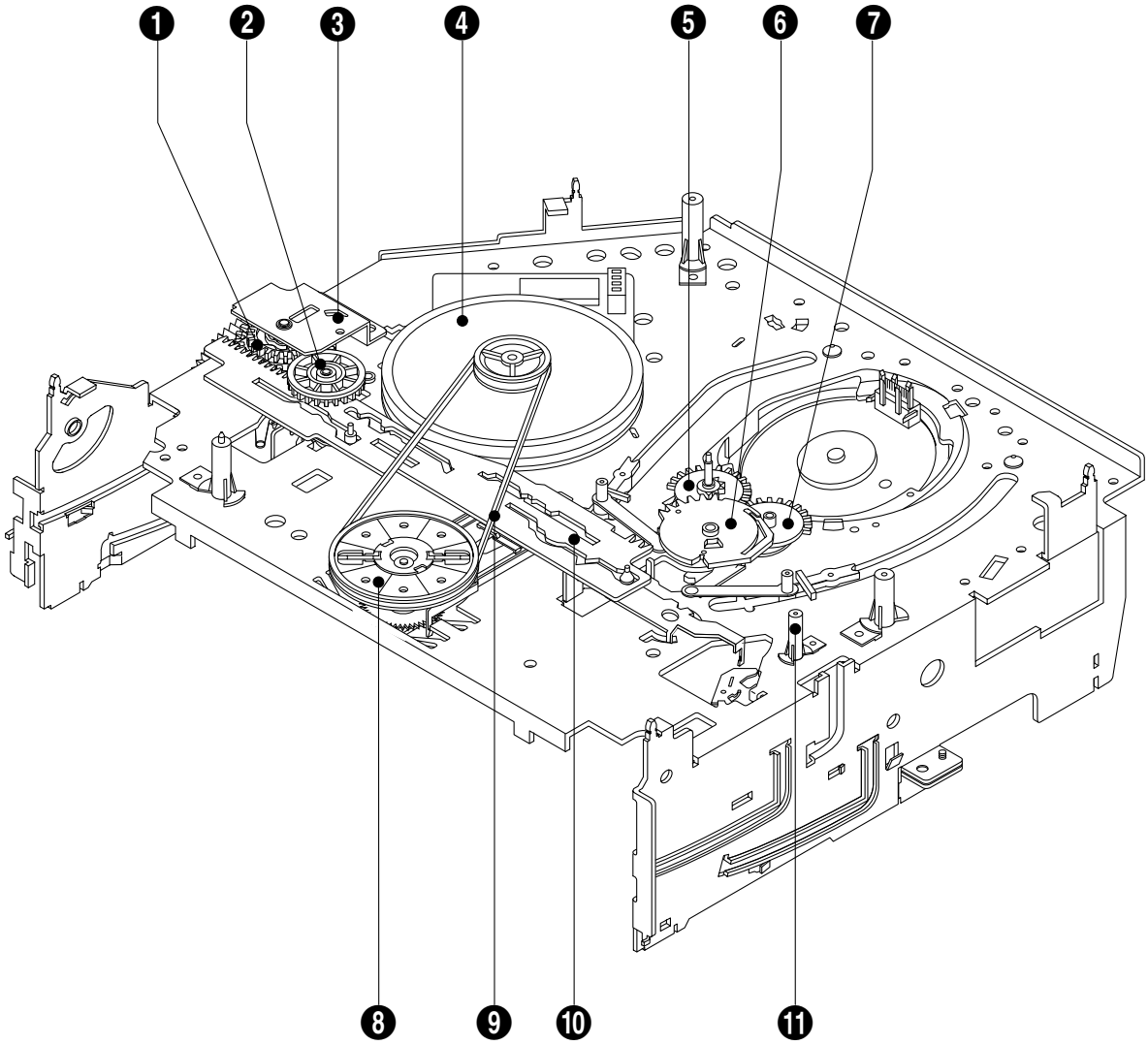


Fig. 4-7 Bottom Parts Location

1. GEAR JOINT 1
2. GEAR JOINT 2
3. BRAKET GEAR
4. MOTOR CAPSTAN ASS'Y
5. LEVER T LOAD ASS'Y
6. GEAR LOADING DRIVE
7. LEVER S LOAD ASS'Y
8. HOLDER CLUTCH ASS'Y
9. BELT PULLEY
10. SLIDER CAM
11. SLEEVE TENSION

4-3 Main Deck

4-3-1 Braket FL Top Removal (Optional)

1) Remove 2 screws ❶.
2) Remove the Bracket FL Top ❷.

Note : Take care not to change assembly direction.

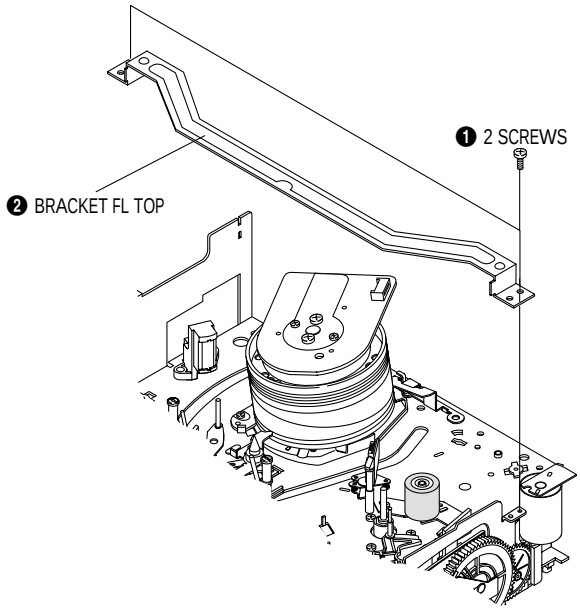


Fig. 4-8 Braket FL Top Removal

4-3-2 Lever FL Door Removal

1) Rotate the Lever FL Door ❶ in the direction of arrow “A”.
2) Release the Hook ❷, remove the Lever FL Door ❶ in the direction of arrow “B”.

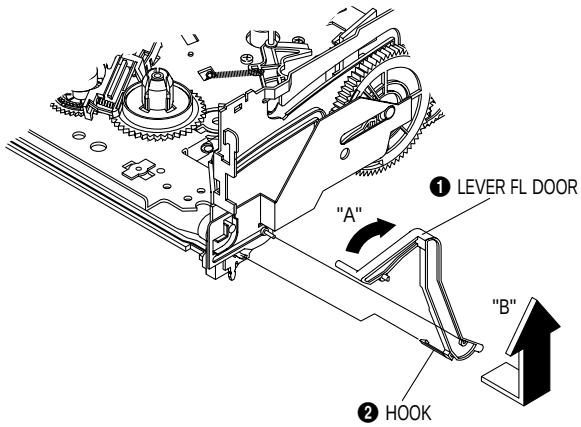


Fig. 4-9 Lever FL Door Removal

4-3-3 Holder FL Cassette Ass'y Removal

1) Remove the Lever FL Door. (Refer to Fig. 4-9)
2) Pull the Holder FL Cassette Ass'y ❶ to the eject position.
3) Pull the Holder FL Cassette Ass'y ❶ as grasping the Holder FL Cassette Ass'y ❶ and Lever FL Cassette-R ❷ in the same time to release hooking from Main Base until the Boss [A], [B] of Holder FL Cassette Ass'y ❶ is taken out from the Rail [C], [D].
4) Lift the Holder FL Cassette Ass'y ❶ in the direction of arrow "B" in this time, you have to grasp the Lever FL Cassette-R ❷ continuously until the Holder FL Cassette Ass'y ❶ is taken out completely.

Note : Be sure to insert Lever FL Cassette-R ❷ in the direction of "A" to prevent seperation and breakage of the Lever FL Cassette-R ❷ at disassembling and reassembling.

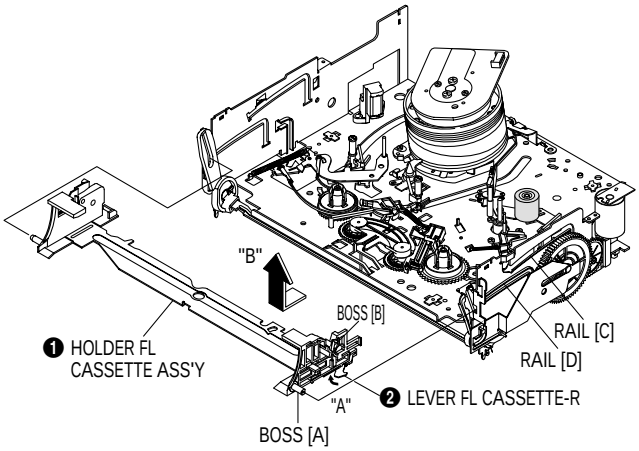


Fig. 4-10 Holder FL Cassette Ass'y Removal

4-3-4 Lever FL Arm Ass'y Removal

1) Remove the Lever FL Door. (Refer to Fig. 4-9)
2) Remove the Holder FL Cassette Ass'y. (Refer to Fig. 4-10)
3) Release the Hook ❶ in the direction of arreow "A", pull out the Lever FL Arm Ass'y ❹ from the Boss of Main Base.
4) Remove the Lever FL Arm Ass'y ❹ in the direction of arrow "B".

Assembly : When reinstalling, be sure to reassemble Lever FL Arm Ass'y ❹ after you insert the Boss ❷ in Groove [A] of Slider FL Drive ❸.

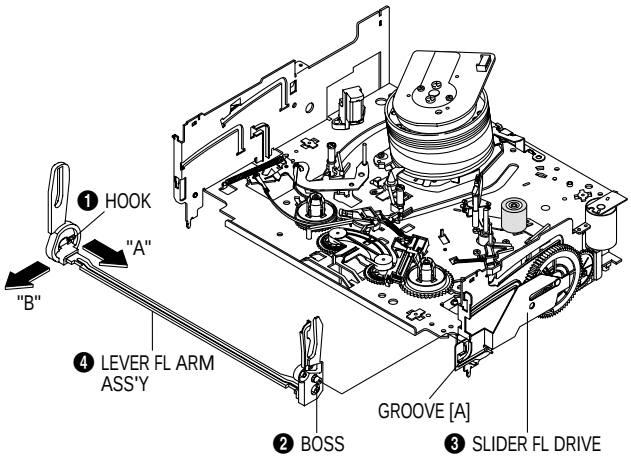


Fig. 4-11 Lever FL Arm Ass'y Removal

4-3-5 Slider FL Drive Removal

1) Pull the Slider FL Drive ❶ to the front direction.
2) Remove the Slider FL Drive ❶ in the direction of arrow. (Refer ti Fig. 4-12)

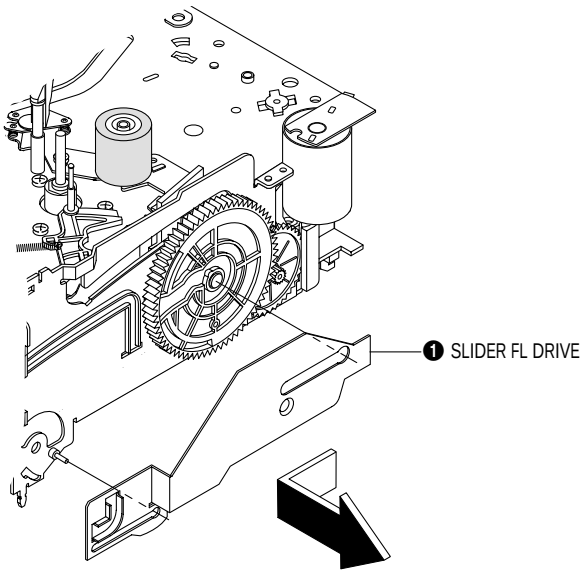


Fig. 4-12 Slider FL Drive Removal

4-3-6 Bracket Gear, Gear FL Cam, Gear Joint 1, 2 Removal

1) Remove screw ❶.
2) Lift the Bracket Gear ❷.
3) Remove the Gear FL Cam ❸.
4) Lift the Gear Joint 2 ❹, Gear Joint 1 ❺.

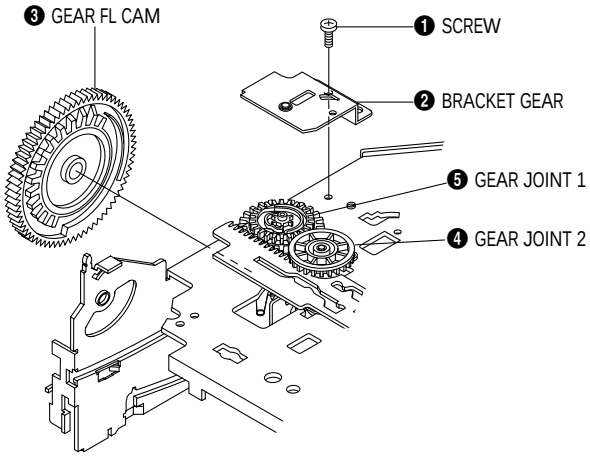


Fig. 4-13 Bracket Gear, Gear FL Cam, Gear Joint 1, 2 Removal

4-3-7 Assembly of Gear FL Cam, Gear Joint 1, 2

1) Be sure to align dot mark of Gear Joint 1 ❶ with dot mark of Gear Joint 2 ❷ as shown Fig. 4-14 (Refer to Timing Point 1), confirm the Timing Point 2 of the Gear Joint 2 ❷ and Slider Cam ❸.
2) Align the Gear FL Cam ❹ with the Gear Worm Wheel Post as shown detail drawing. (Refer to Timing Point 3)

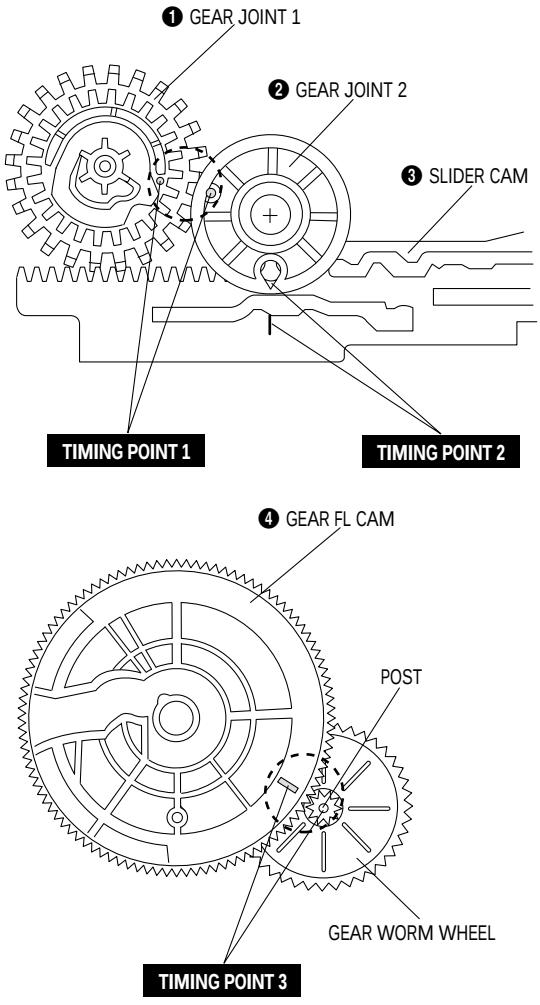


Fig. 4-14 Assembly of Gear FL Cam, Gear Joint 1, 2

4-3-8 Holder Worm, Gear Worm, Gear Worm Wheel Removal

1) Release the Hook [A] in the direction of arrow and, remove the Holder Worm ❶.
2) Remove the Gear Worm ❷.
3) Remove the Gear Worm Wheel ❸. (After removing the Gear FL Cam as shown Fig. 4-13)

Note : Secure the Hook [A] after installing the Holder Worm ❶.

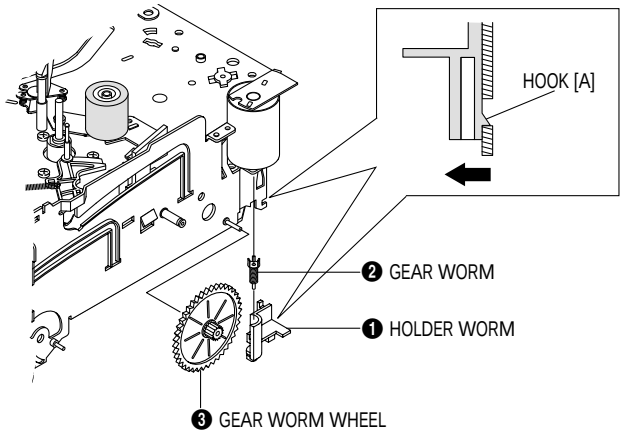


Fig. 4-15 Holder Worm, Gear Worm, Gear Worm Wheel Removal

4-3-9 Motor Loading Ass'y Removal

1) Remove the screw ❶.
2) Remove the Motor Loading Ass'y ❷.

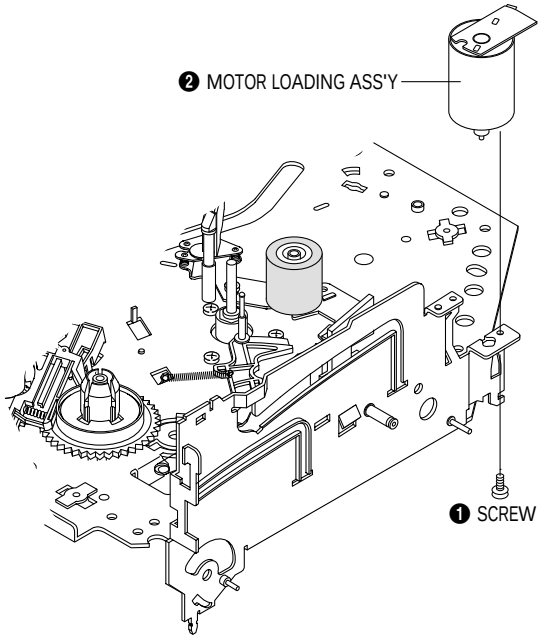


Fig. 4-16 Motor Loading Ass'y Removal

4-3-10 Gear Loading Drive, Slider Cam, Lever T, S Load Ass'y Removal

1) Remove the Belt Pulley. (Refer to Fig. 4-33)
2) Remove the Gear Loading Drive ❶ after releasing Hook [A] in the direction arrow as shown in detail drawing.
3) Remove the Slider Cam ❷.
4) Remove the Lever T, S Load Ass'y ❸, ❹.

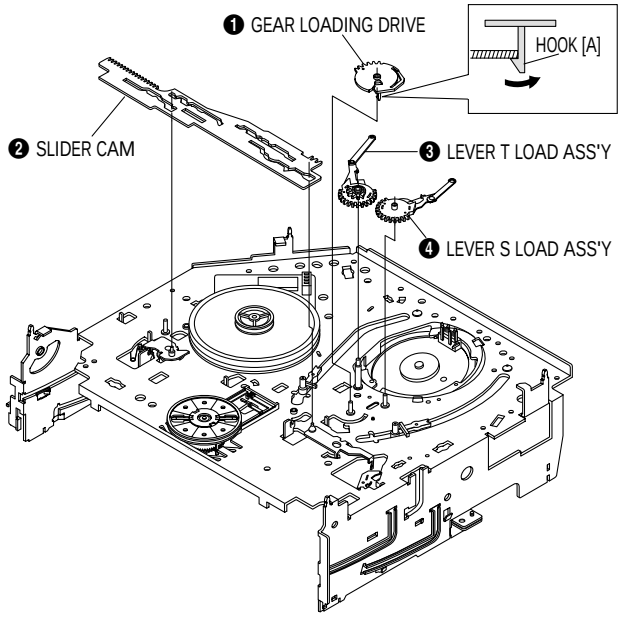


Fig. 4-17 Gear Loading Drive, Slider Cam, Lever T, S Load Ass'y Removal

4-3-11 Assembly of Gear Loading Drive, Slider Cam, Lever T, S Load Ass'y

1) When reinstalling, be sure to align dot of Lever T Load Ass'y ❶ with dot of Lever S Load Ass'y ❷ as shown in drawing. (Refer to Timing Point 1)
2) Insert the Pin A, B, C, D into the Slider Cam ❸ hole.
3) Be sure to align dot of Lever T Load Ass'y and dot of Gear Loading Drive ❹. (Refer to Timing Point 2)
4) Align dot of Gear Loading Drive with mark of Slider Cam as shown in drawing. (Refer to Timing Point 3)

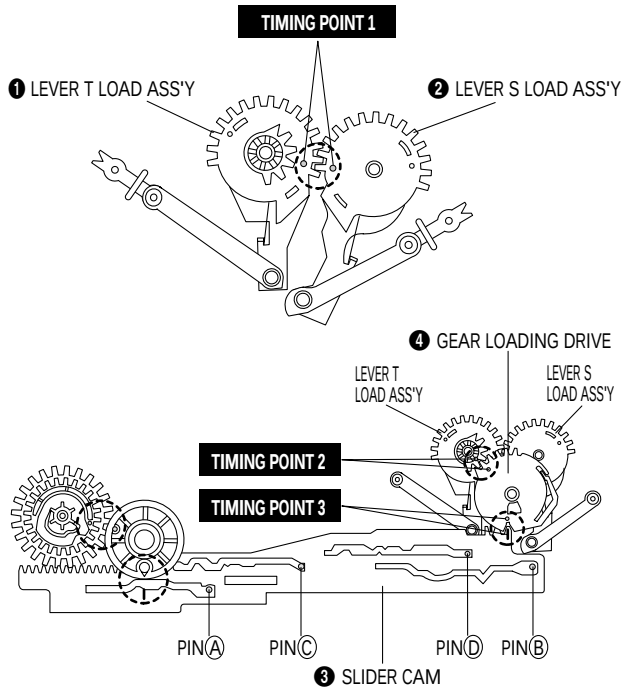


Fig. 4-18 Assembly of Gear Loading Drive, Slider Cam, Lever T, S Load Ass'y

4-3-12 Lever Tension Ass'y, Band Brake Ass'y, Sleeve Tension Removal

1) Remove the Spring Tension ❶.
2) In bottom side of Deck, remove the Sleeve Tension ❷ after rotating it right or left as liftinig locking edge of Sleeve Tension.
3) Remove the side "a" of the Band Brake Ass'y ❹ in the direction of arrow "A" from the Lever Tension Ass'y ❸.
4) Remove the side "b" of the Band Brake Ass'y ❹ in the direction of arrow "B" from the Main Base.

Note :
1) When replacing the Lever Tension Ass'y, be sure to apply oil in the Sleeve Tension.
2) Take care not to touch stain on the felt side, and not to be folded and broken Band Brake Ass'y.

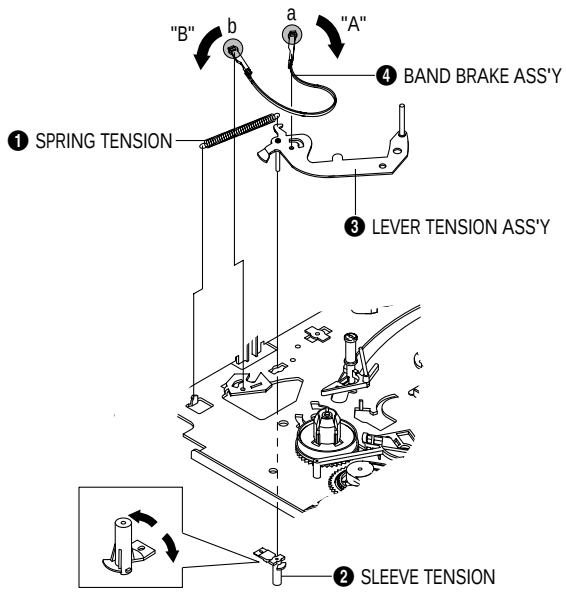


Fig. 4-19 Lever Tension Ass'y, Band Brake Ass'y, Sleeve Tension Removal

4-3-13 Lever S, T Brake Ass'y Removal

1) Release the Hook [A] and the Hook [B], [C] in the direction of arrow as shown in Fig. 4-20.
2) Lift the Lever S, T Brake Ass'y ❶, ❷ with Spring Brake ❸.

Assembly :
1) Assembly the Lever S Brake Ass'y ❶ on the Main Base.
2) Assembly the Lever T Brake Ass'y ❷ with Spring Brake ❸.

Note : Take extreme care not to be folded and transformed spring Brake at removing or reinstalling.

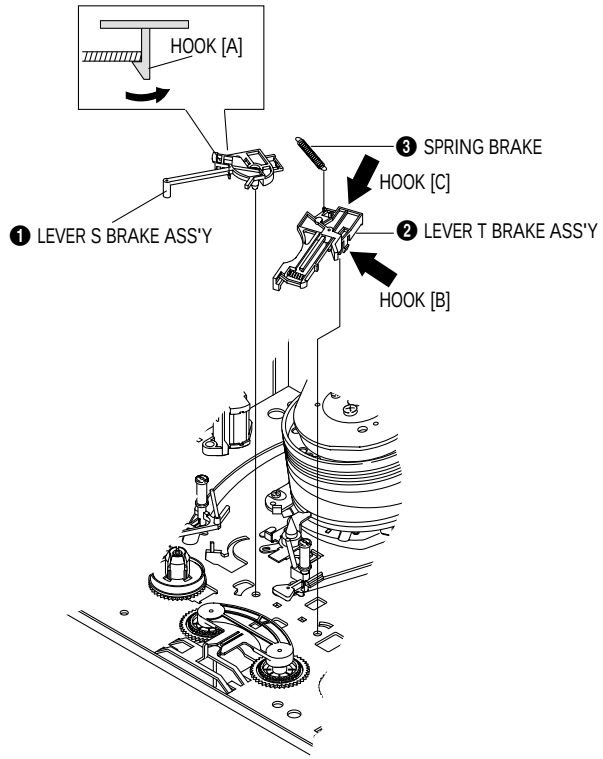


Fig. 4-20 Lever S, T Brake Ass'y Removal

4-3-14 Lever Idle Ass'y Removal

1) Push the Lever Idle ❶ in the direction of arrow "A", "B".
2) Lift the Lever Idle ❶.

Assembly :
1) Apply oil in two Bosses of Lever Idle ❶.
2) Assemble the Gear Idle ❷ with the Lever Idle ❶.

Note : When replacing the Gear Idle ❷, be sure to add oil in the boss of Lever Idle ❶.

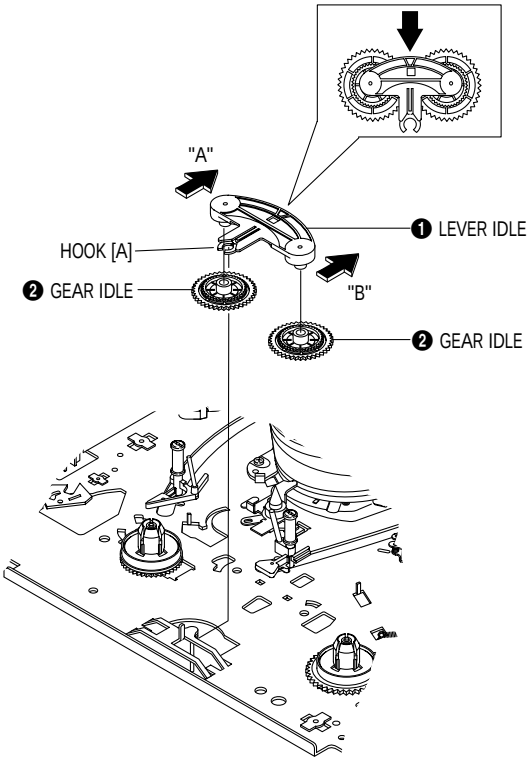


Fig. 4-21 Lever Idle Ass'y Removal

4-3-15 Disk S, T Reel Removal

1) Lift the Disk S, T Reel ❶, ❷.

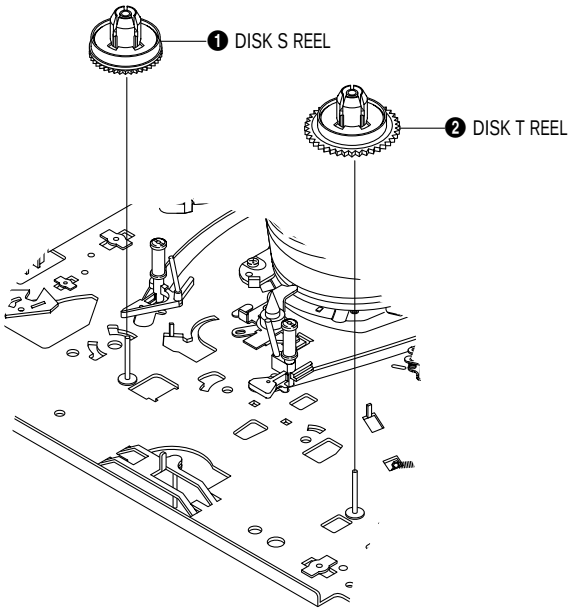
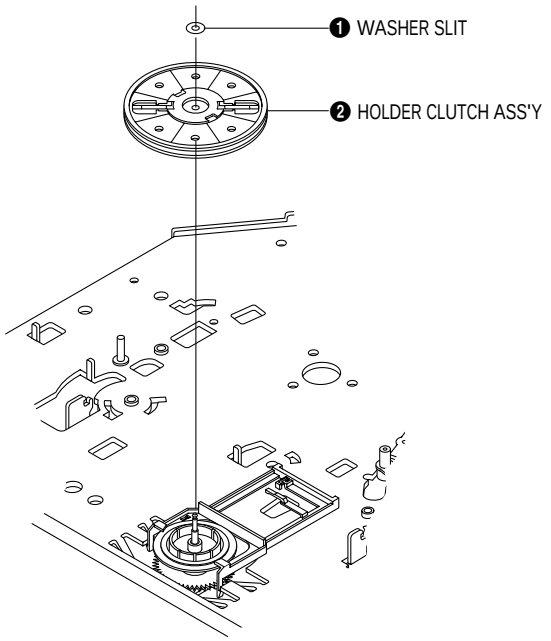


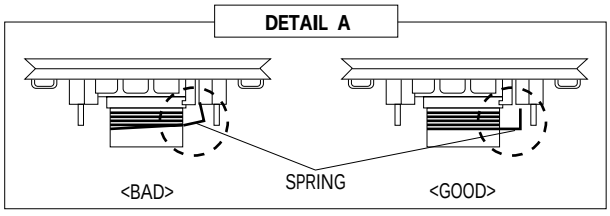
Fig. 4-22 Disk S, T Reel Removal

4-3-16 Holder Clutch Ass'y Removal

1) Remove the Washer Slit ❶.
2) Lift the Holder Clutch Ass'y ❷.

Note : When you reinstall Holder Clutch Ass'y ❷.
1) Check the condition of spring as shown in detail A.
2) Don't push Holder Clutch Ass'y down with excessive force. Just insert Holder Clutch Ass'y into post center with dead force and rotate it smoothly. Be sure to confirm that spring is in the slit of Gear Center Ass'y as shown in detail B.





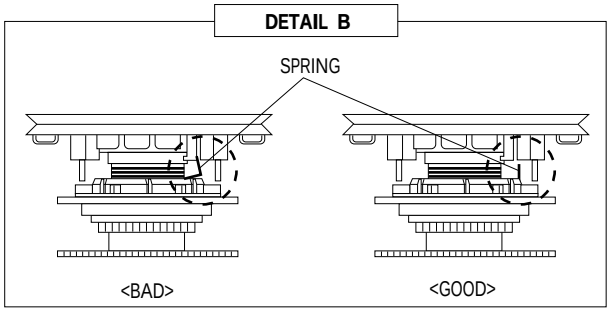


Fig. 4-23 Holder Clutch Ass'y Removal

4-3-17 Lever Up Down Ass'y, Gear Center Ass'y Removal

1) Remove the 2 hooks in the direction of arrow as shown Fig. 4-24 and lift the Lever Up Down Ass'y ❶.
2) Lift the Gear Center Ass'y ❷.

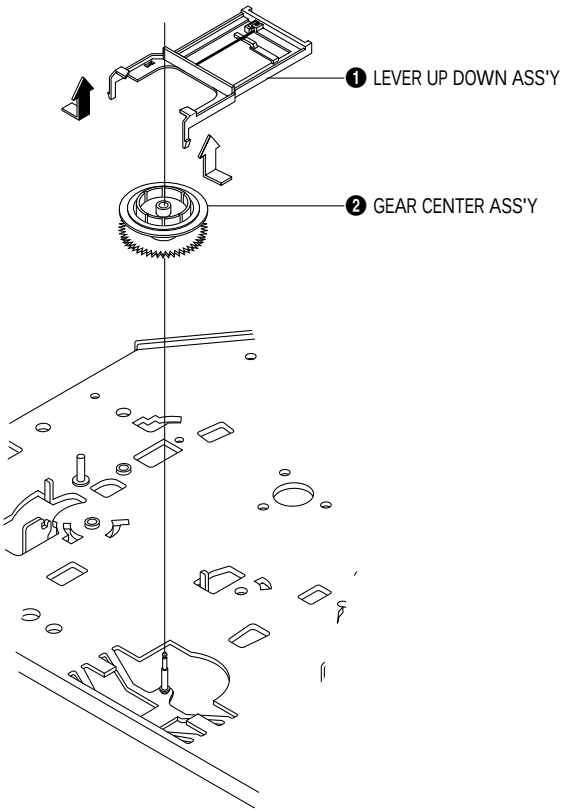


Fig. 4-24 Lever Up Down Ass'y, Gear Center Ass'y Removal

4-3-18 Assembly of Lever Up Down Ass'y, Gear Center Ass'y

1) Insert the Lever Up Down Ass'y ❶ in the 2 rectangular holes on Main Base.
2) Lift the Lever Up Down Ass'y ❶ about 35 degree. (Refer to Fig. 4-25)
3) Insert Ring ❹ of the Gear Center Ass'y ❷ in the Guide ❺ of the Lever Up Down Ass'y ❶.
4) Insert the Gear Center Ass'y ❷ in the post ❻ on Main Base.
5) Push down the Lever Up Down Ass'y ❶ for locking of the Hook ❼.

Note :
1) Take care not to separate and loose the Spring Up Down.
2) When assembling the Gear Center Ass'y, don't push down too much.

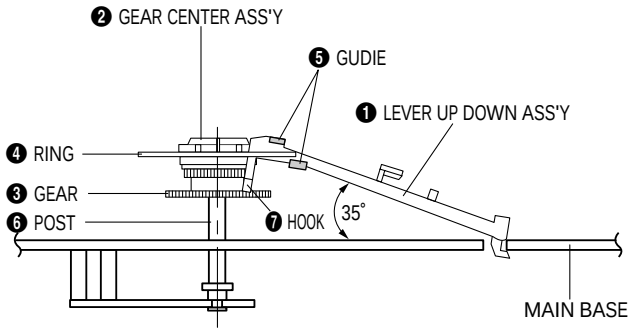


Fig. 4-25 Assembly of Lever Up Down Ass'y, Gear Center Ass'y

4-3-19 Guide Cassette Door Removal

1) Lift the Hook [A].
2) Rotate the Guide Cassette Door ❶ in the direction of arrow.

Note : After reinstalling the Guide Cassette Door ❶ secure the Hook [A].

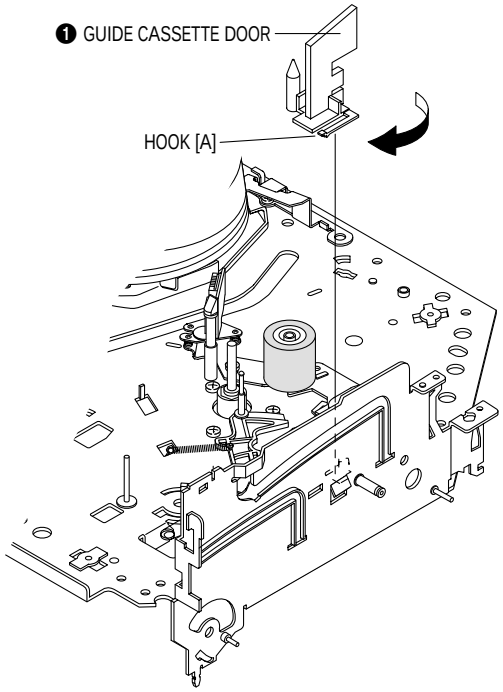


Fig. 4-26 Guide Cassette Door Removal

4-3-20 Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

1) Lift the Unit Pinch Ass'y ❶.
2) Remove the Plate Joint ❷ from Lever Pinch Drive.
3) Remove the Spring Pinch Drive ❸.

Note :
1) Take extreme care not to touch the grease on the Roller Pinch.
2) When reinstalling, be sure to apply grease on the post pinch roller.

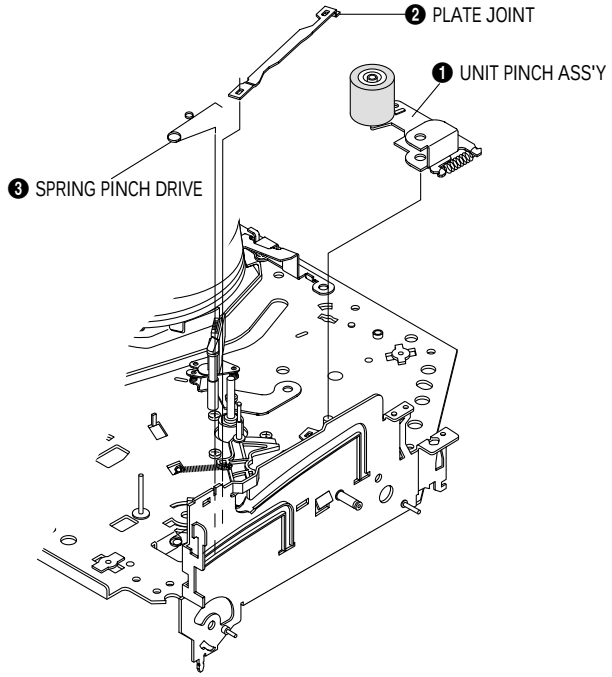


Fig. 4-27 Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

4-3-21 Lever #9 Guide Ass'y Removal

1) Remove the Spring #9 Guide ❶.
2) Lift the Lever #9 Guide Ass'y ❷ in the direction of arrow.

Note :
1) Take extreme care not to touch the grease on the tape Guide Post.
2) After reinstalling, check the bottom side of the Post #9 Guide to stick to the top side of Main Base.

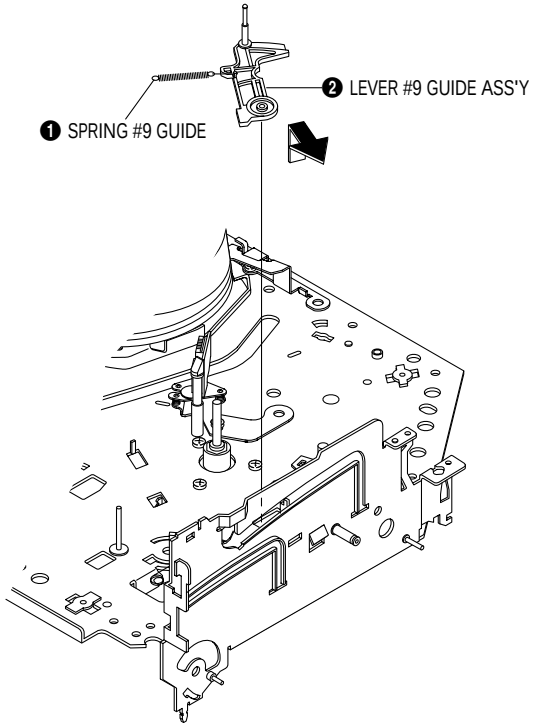


Fig. 4-28 Lever #9 Guide Ass'y Removal

4-3-22 FE Head Removal

1) Remove the screw ❶.
2) Lift the FE Head ❷.

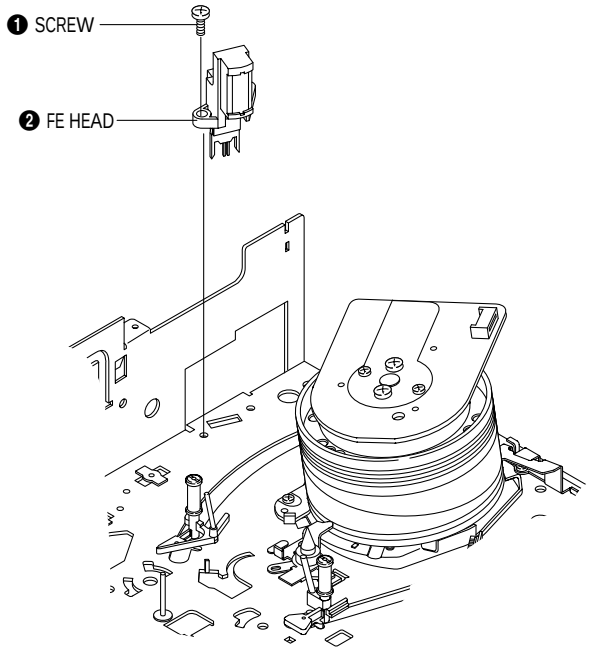


Fig. 4-29 FE Head Removal

4-3-23 ACE Head Removal

1) Pull out the FPC from connector of ACE Head Ass'y ❷.
2) Remove the screw ❶.
3) Lift the ACE Head Ass'y ❷.

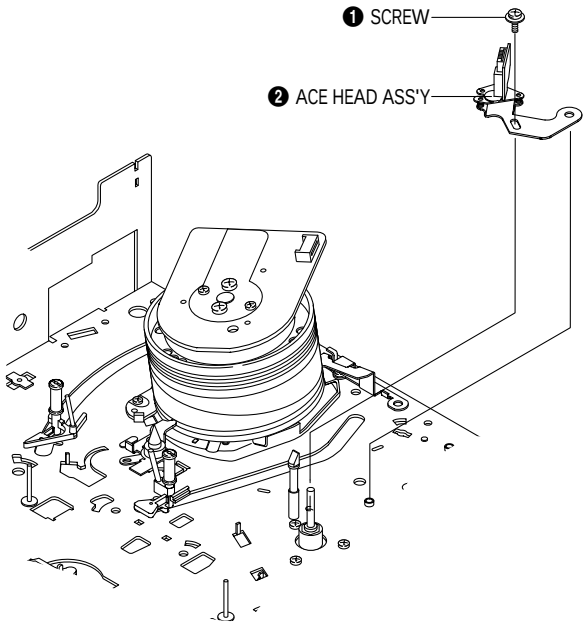


Fig. 4-30 ACE Head Removal

4-3-24 Slider S, T Ass'y Removal

1) Move the Slider S, T Ass'y ❶, ❷ to slot, and then lift it to remove. (Refer to arrow)

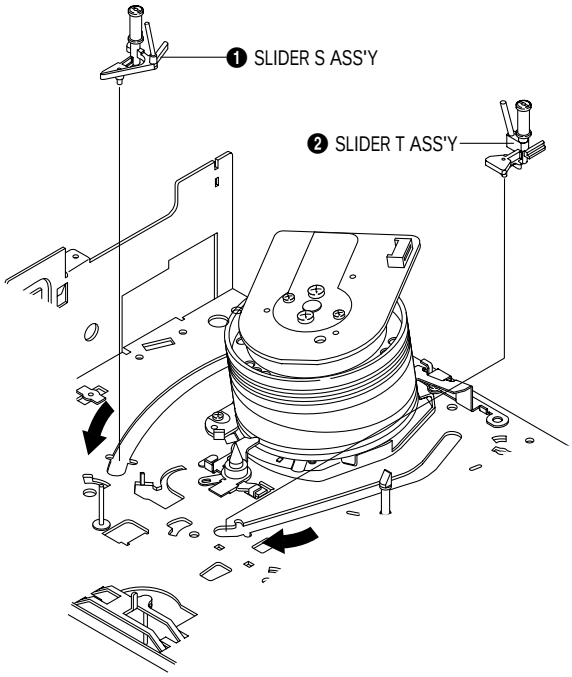


Fig. 4-31 Slider S, T Ass'y Removal

4-3-25 Cylinder Ass'y Removal

1) Remove the 3 Screws ❶, ❸, ❺.
2) Remove the Plate Cylinder A, B, C ❷, ❹, ❻ in the direction of arrow.
3) Lift the Cylinder Ass'y ❼.

Note :
1) When reinstalling, push the Plate Cylinder A, B ❹, ❻ in the reverse of arrow and then, tighten the 2 Screws ❸, ❺.
2) Take care not to touch the Cylinder Ass'y and the tape guide post at reinstalling Plate Cylinder C ❷.
3) Take care not to touch the Cylinder Ass'y with screw driver at reinstalling the Plate Cylinder C ❷.

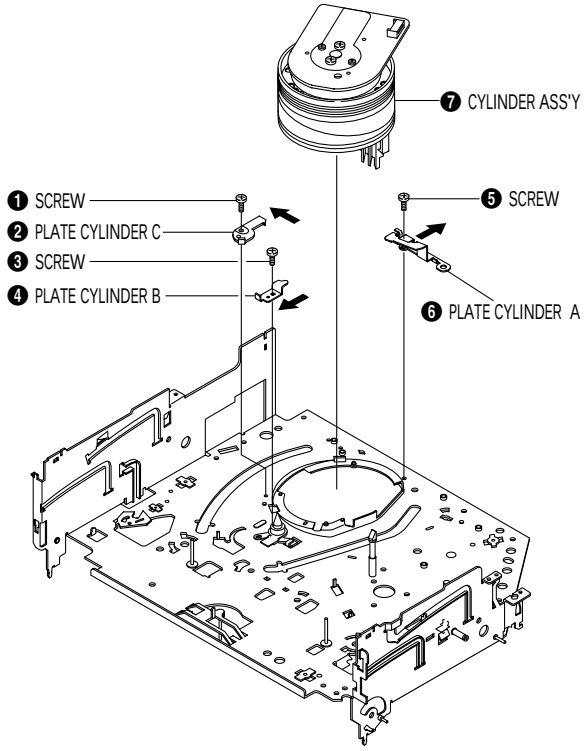


Fig. 4-32 Cylinder Ass'y Removal

4-3-26 Belt Pulley Removal

1) Remove the Belt Pulley ❶.

Note : Take extreme care not to touch the grease on Belt Pulley ❶ at assembling or reassembling.

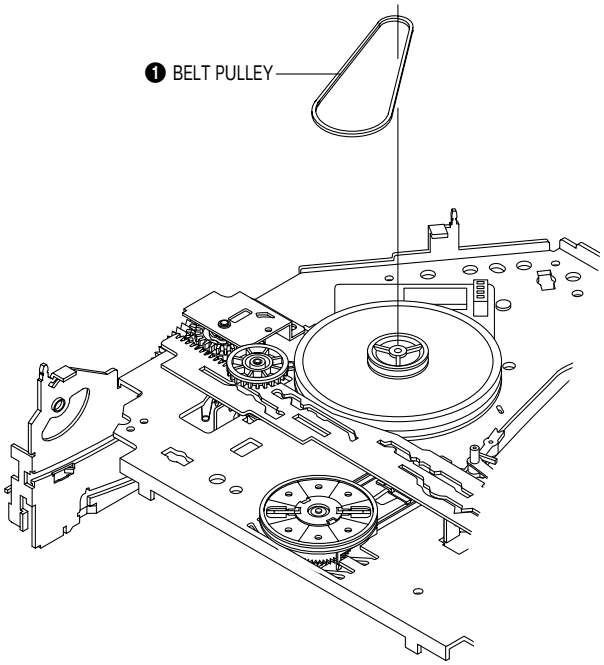


Fig. 4-33 Belt Pulley Removal

4-3-27 Motor Capstan Ass'y Removal

1) Remove the 3 Screws ❶.
2) Remove the Motor Capstan Ass'y ❷.

Assembly :

1) Match the 3 holes of Motor Capstan Ass'y ❷ to the 3 holes of Main Base as attending not to drop or knock the Motor Capstan Ass'y.
2) Tighten the 3 Screws in the direction of arrow as shown detail drawing.

Note :

1) Don't reuse the removed screws from Motor Capstan Ass'y.
2) After tightening screws, check if there is gap between the head of screws and the top side of Main Base. There should have no gap between the head of screws and the top side of Main Base.
3) After reinstalling, adjusting the tape transport system again.

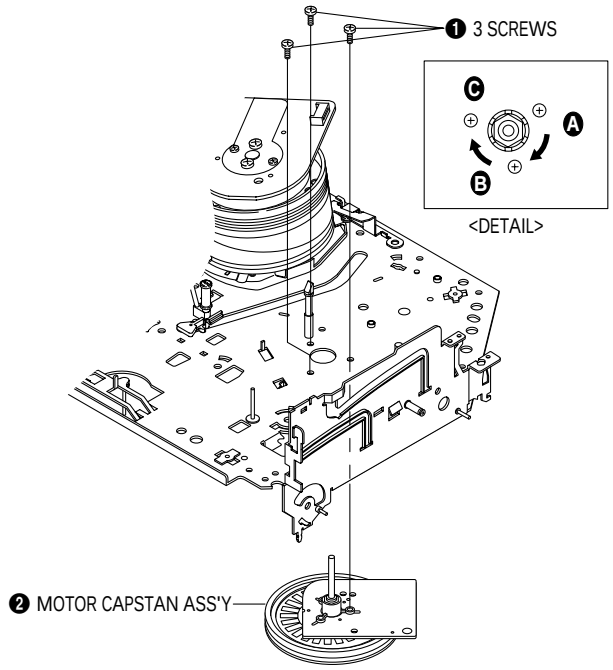


Fig. 4-34 Motor Capstan Ass'y Removal

4-3-28 How to Eject the Cassette Tape (If the unit does not oprate on condition that is inserted into housing ass'y)

1) Remove the Holder worm ❶ and the Gear Worm ❷.
2) Turn the Gear Worm Wheel ❸ counterclockwise with screw driver. (Refer to arrow)

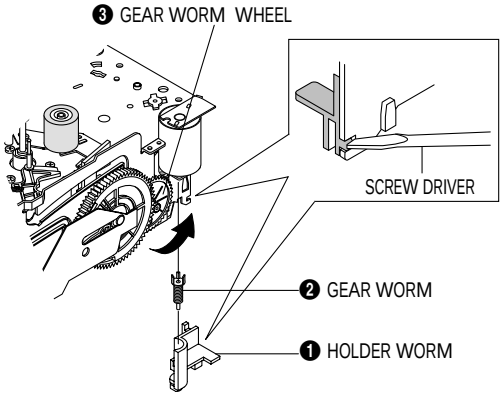


Fig. 4-35

3) When Slider S, T are approched in the position of unloading, rotate holder Clutch counterclockwise after inserting screw driver in the hole of frame's bottom in order to wind the unwinded tape. (Refer to Fig. 4-36)
(If you rotate Gear Worm Wheel continuously when tape is in state of unwinding, you may cause a tape contamination by grease and tape damage. Be sure to wind the unwinded tape in the state of set horizontly.)
4) Rotate Gear Worm Wheel ❸ counterclockwise using screw driver again up to the state of eject mode and then pick out the tape. (Refer to Fig. 4-35)

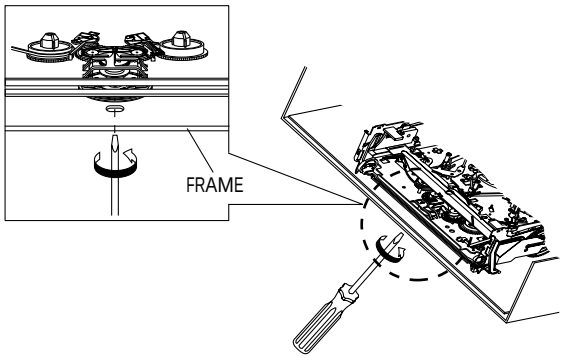


Fig. 4-36

4-4 The table of clearing, Lubrication and replacement time about principal parts

1) The replacement time of parts is not life of parts.
2) The table 4-1 is that the VCR Set is in normal condition (normal temperature, normal humidity).
   The checking period may be changed owing to the condition of use, runtime and environmental conditions.
3) Life of the Cylinder Ass'y is depend on the condition of use.
4) See exploded view for location of each parts.

<Tbale 4-1>

*	Parts Name	Checking Period										Remark
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
TAPE PATH SYSTEM	POST TENSION	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- To clean the parts, use patch and alcohol (solvent). - After cleaning, use the video tape after alcohol is gone awny completely. - We recomnend to use oil [EP-56] or solvent. - One or two drops of oil should be applied after cleaning with alcohol.
	SLANT POST S, T	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#8 GUIDE SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	CAPSTAN SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#9 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#3 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	GUIDE ROLLER S, T	Δ	Δ	Δ	O	O	O	O	O	O	O	
	CYLINDER ASS'Y	Δ	O	O	O	O	O	O	O	O	O	
	FE HEAD	Δ	Δ	Δ	O	O	O	O	O	O	O	
	ACE HEAD	Δ	O	O	O	O	O	O	O	O	O	
	PINCH ROLLER	Δ	O	O	O	O	O	O	O	O	O	
	POST REEL S, T		◆		◆		◆		◆		◆	- Periodic time of applying oil (Apply oil after cleaning) - The excessive applying oil may be the cause of malfunction.
	SLEEVE TENSION		◆		◆		◆		◆		◆	
	POST CENTER		◆		◆		◆		◆		◆	
	LEVER IDLE BOSS (2Point)		◆		◆		◆		◆		◆	
DRIVING SYSTEM	CAPSTAN MOTOR PULLEY	Δ	Δ	Δ	Δ	Δ	O	O	O	O	O	
	BELT PULLEY				O	O	O	O	O	O	O	
	HOLDER CLUTCH ASS'Y	Δ	O	O	O	O	O	O	O	O	O	
	GEAR CENTER ASS'Y		O	O	O	O	O	O	O	O	O	
	GEAR IDLE (2Point)		O	O	O	O	O	O	O	O	O	
	LOADING MOTOR		O	O	O	O	O	O	O	O	O	
BRAKE SYSTEM	BAND BRAKE ASS'Y		O	O	O	O	O	O	O	O	O	
	BRAKE T ASS'Y		O	O	O	O	O	O	O	O	O	

Δ : Cleaning O : Check and replacement in necessary ◆ : Add Oil

5. Alignment and Adjustment

5-1 Reference

1) X-Point (Tracking center) adjustment, “Head switching adjustment” and “NVRAM option setting” can be adjusted with remote control.
2) When replacing the micom (IC601) be sure to adjust the “Head switching adjustment” and “NVRAM option setting”.
3) When replacing the cylinder ass’y, be sure to adjust the “X-Point” and “Head switching adjustment”.
4) Remote control used for same chassis as a accessory is available for all adjustments.
5) How to adjustment.
   - Intermittently short-circuit the test point on Main PCB with pincets to set the adjustment mode.
   - If the corresponding adjustment button is pressed, the adjustment is preformed automatically.
   - If the adjustment is completed, be sure to turn the power off.

5-1-1 Location of adjustment button of remote control

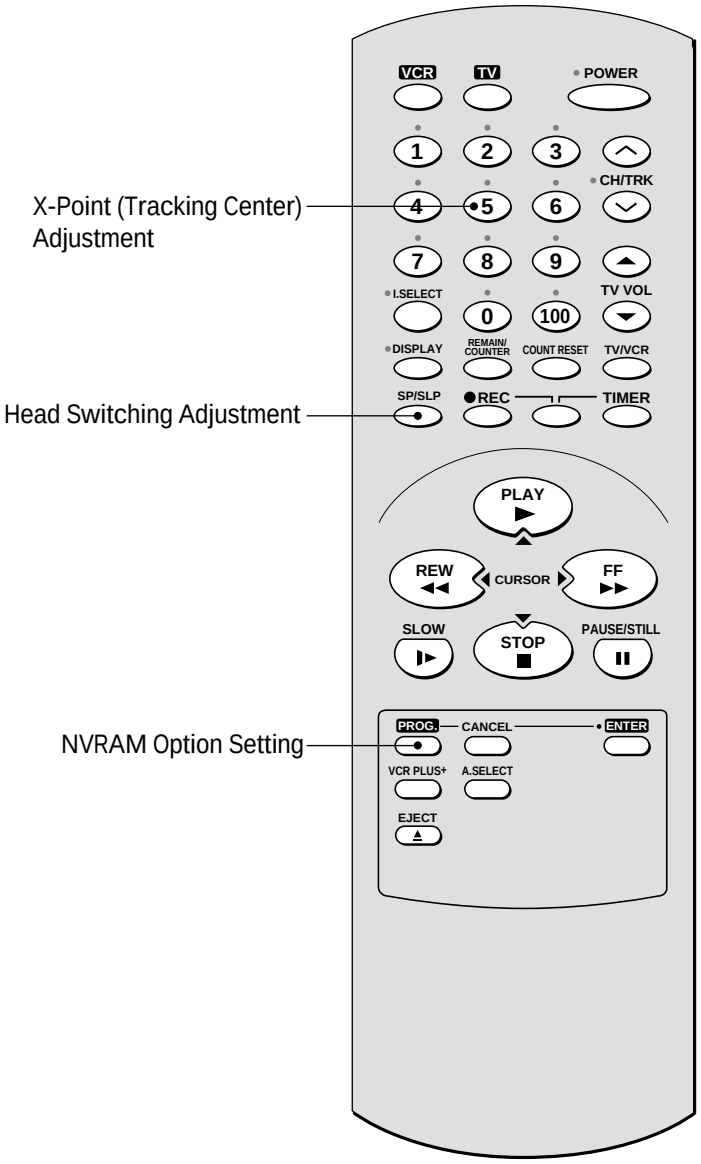


Fig. 5-1

5-1-2 Test point location for adjustment mode setting

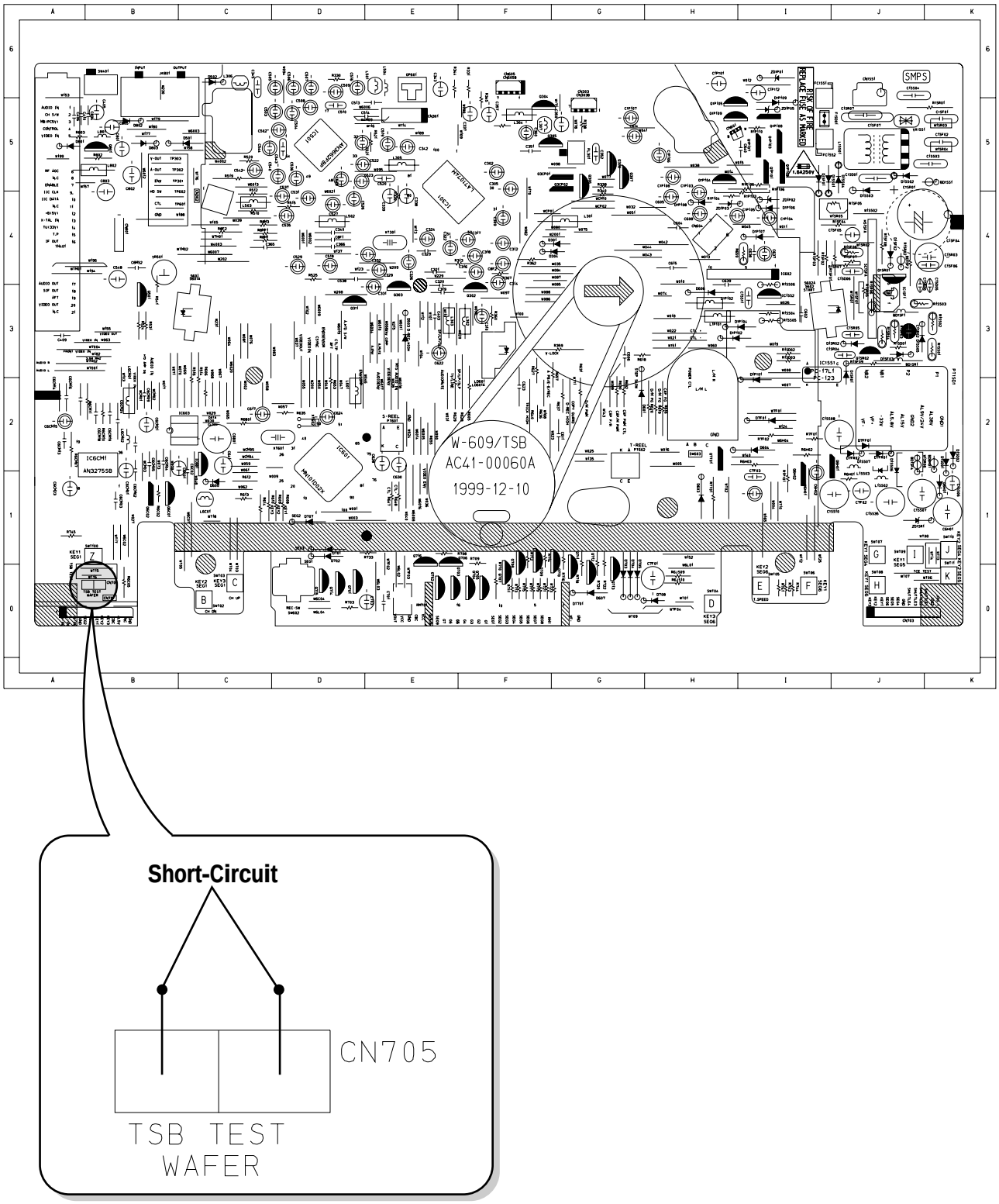


Fig. 5-2 Main PCB (Top View)

5-2 Mechanical Adjustment

5-2-1 Tape Transport System and Adjustment Locations

The tape transport system has been adjusted precisely in the factory. Alignment is not necessary except for the following :
1) Noise observed on the screen.
2) Tape damage.
3) Parts replacement in the tape transport system.

Lower flange height of tape guide is used as the reference for the transport adjustment.
To maintain the height of the tape guide and prevent damage, do not apply excessive force onto the main base.

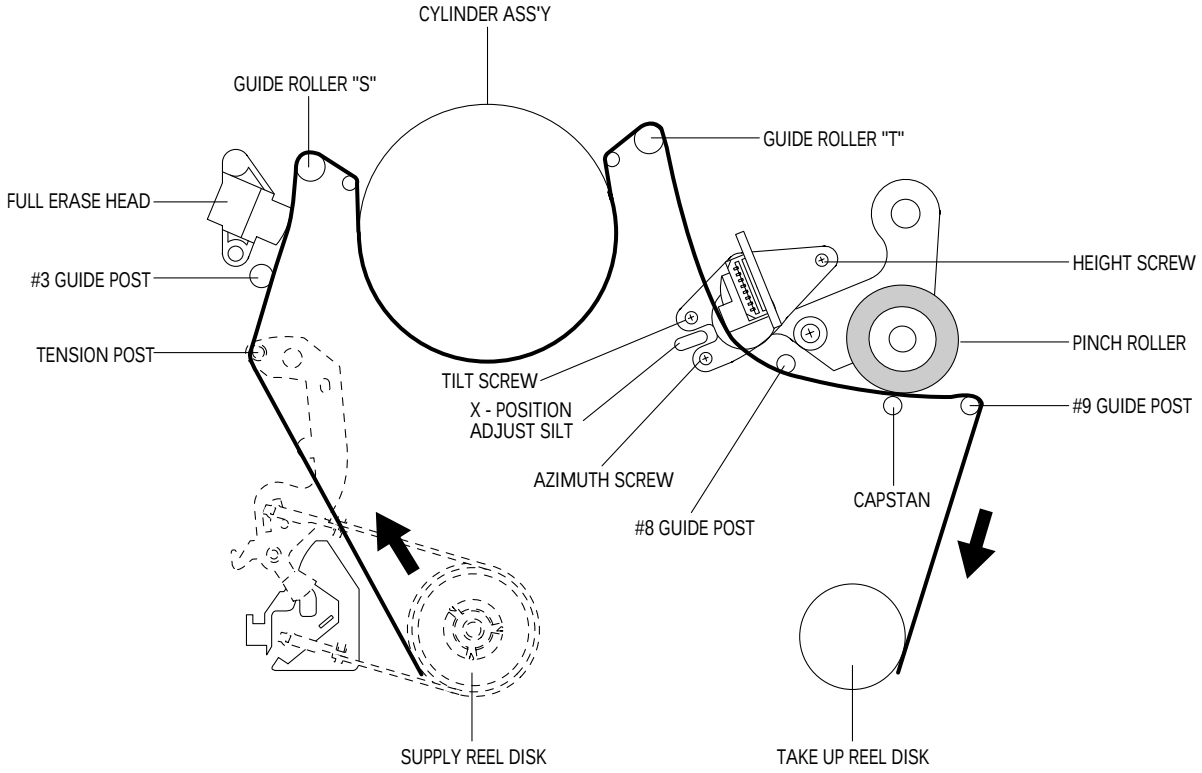


Fig. 5-3 Location of Tape Transport Adjustment

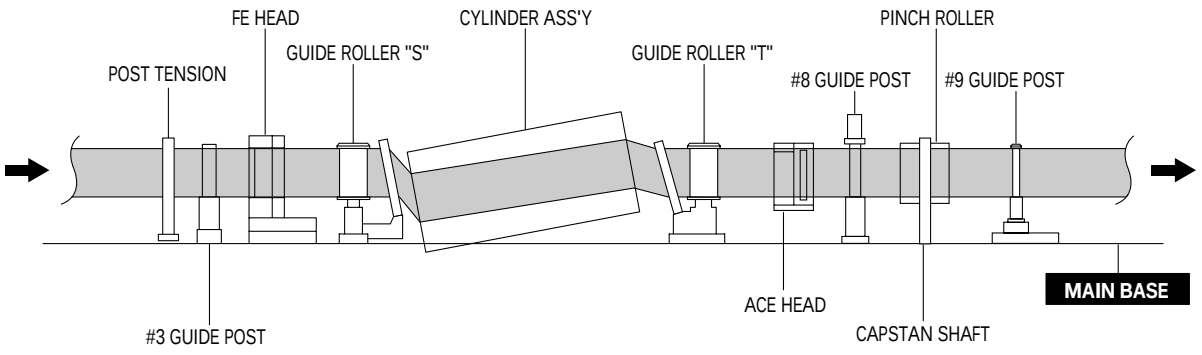


Fig. 5-4 Tape Travel Diagram

5-2-2 Tape Transport System Adjustment

When parts are replaced, perform the required adjustments by referring to precedures for the tape transport system. If there are any changes to the tape path, first run a T-120 tape and make sure excessive tape wrinkle does not occur at the tape guides.

1) If tape wrinkle is observed at the guide roller S, T, turn the guide roller S, T until wrinkle disappears.
2) If the tape wrinkle is still observed at the tape guide, perform the tilt adjustment of the ACE head.

(1) ACE Head Assembly Adjustment

Test point :	TP601 (Control Pulse)
	TP602 (H'D S/W -Trigger)
	TP301 (Envelope)
	TP302 (Audio output)
	TP303 (Video output)
Test tape :	ST-N1
	BLANK TAPE : T-160

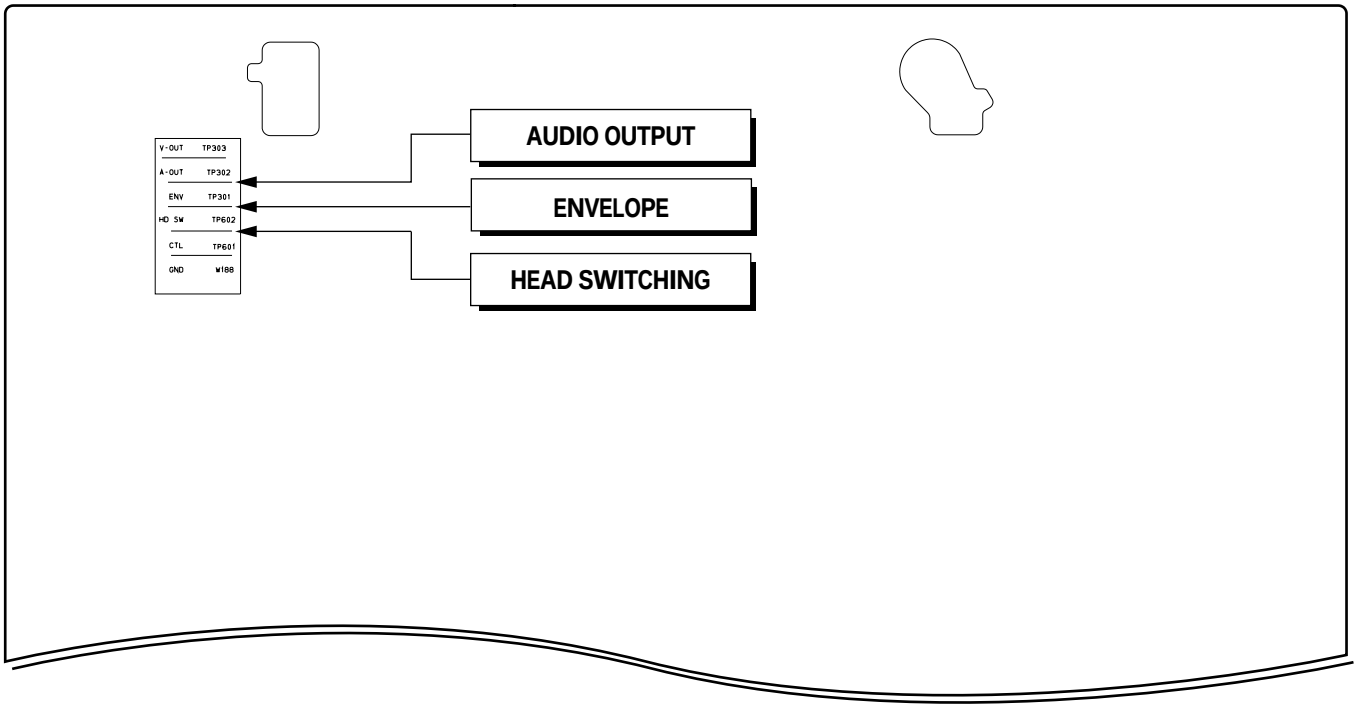


Fig. 5-5 Location of Test point (Main PCB-Top View)

a. ACE HEAD HEIGHT ADJUSTMENT

1) Run the alignment tape (Color bar) in the playback mode.
2) Observe surface of the audio head using a dental mirror.
3) Turn screw (C) clockwise or counterclockwise until the gap of lower tape edge and the lower edge of the control head is about 0.25mm.
(Refer to Fig. 5-6 and 5-7)

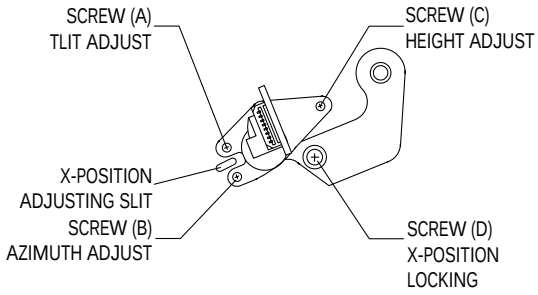


Fig. 5-6 Location of ACE Head Adjustment Screw

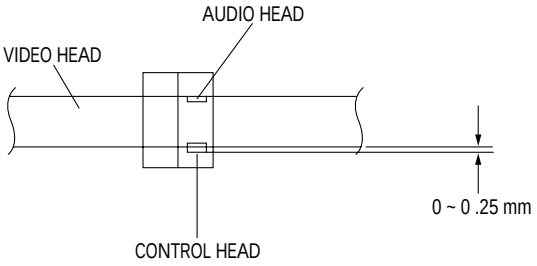


Fig. 5-7 ACE Head Height Adjustment

b. ACE HEAD TILT ADJUSTMENT

1) Playback a blank tape and observe the position of the tape at the lower flange of tape guide.
2) Confirm that there is no curl or wrinkle at the lower flange of tape guide as shown in Fig. 5-8 (B).
3) If a curl or wrinkle of the tape occurrs, slightly turn the screw (A) tilt adjust on the ACE head ass'y.
4) Reconfirm the ACE head height.

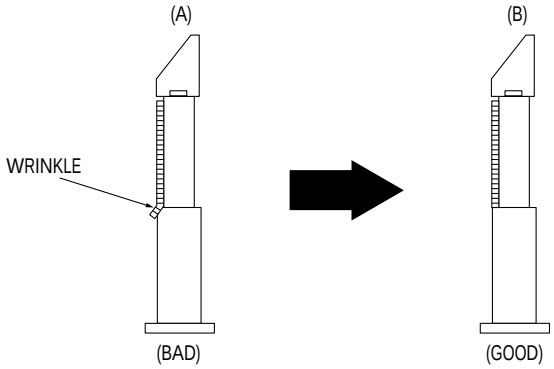


Fig. 5-8 Tape Guide Check

c. AUDIO AZIMUTH ADJUSTMENT

1) Load alignment tape (Mono scope) and playback the 7KHz signal.
2) Connect channel-1 scope probe to audio output test point (TP302).
3) Adjust screw (B) to achieve maximum audio level. (See Fig. 5-6)

d. ACE HEAD POSITION (X-POINT) ADJUSTMENT

1) Playback the alignment tape (Color bar).
2) Intermittently short-circuit the two test points on Main PCB to set the adjustment mode.
(See Fig. 5-2)
3) Press the "5" button of remote control then adjustment is operated automatically. (See Fig. 5-1)
4) Connect the CH-1 probe to TP301 (Envelope) the CH-2 probe to TP602 (H'D switching pulse) and then trigger to CH-1.
5) Insert the (-) driver into the X-Point adjustment hole and adjust it so that envelope wavwform is maximum.
6) Turn the Power off.

(2) Linearity adjustment (Guide roller S, T adjustment)

1) Playback the Mono Scope alignment tape (SP mode).
2) Observe the video envelope signal on an oscilloscope (triggered by the video switching pulse).
3) Make sure the video envelope waveform (at its minimum) meets the specification shown in Fig. 5-9.
   If it does not, adjust as follows :

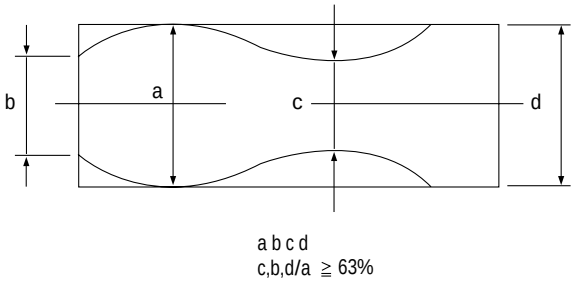


Fig. 5-09 Envelope Waveform Adjustment

Note :
a=Maximum output of the video RF envelope.
b=Minimum output of the video RF envelope at the entrance side.
c=Minimum output of the video RF envelope at the center point.
d=Maximum output of the video RF envelope at the exit side.

4) If the section A in Fig. 5-10 does not meet the specification, adjust the guide roller S up or down.
5) If the section B in Fig. 5-10 does not meet the specification, adjust the guide roller T up or down.

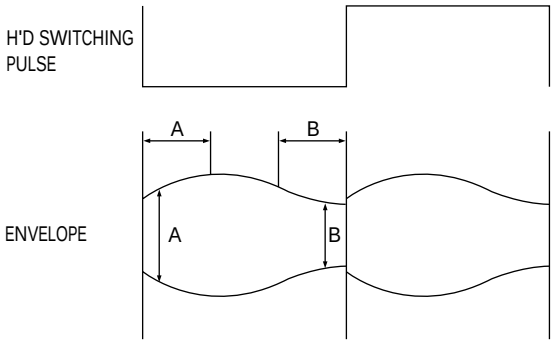


Fig. 5-10 Adjustment Points

6) Play back the Mono Scope alignment tape (SP mode).
7) Connect an oscilloscope CH-1 to the Envelope and CH-2 to the H'D SW Pulse for triggering.
8) Turn the guide roller heads with a flat head (▬) driver to obtain a flat video RF envelope as shown in Fig. 5-11.

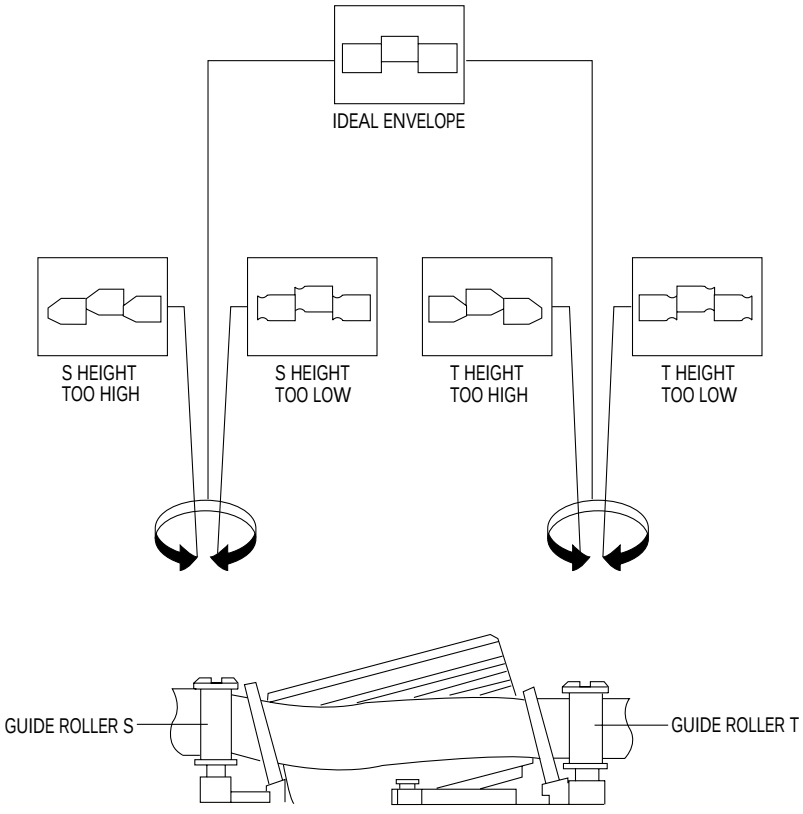


Fig. 5-11 Guide Roller S, T Height Adjustment

(3) Check Transitional Operation from RPS to Play

Check transition from RPS mode to play mode :
Using a pre-recorded SP tape, make sure the entry side of envelope comes to an appropriate steady state within 3 seconds (as shown in Fig. 5-12).
If the envelope waveform does not reach specified peak-to peak amplitude within 3 seconds, adjust as follows :

1) Make sure there is no gap between the supply roller lower flange and the tape.
   If there is a gap, adjust the supply guide roller again.
2) Change operation mode from the RPS to the play mode (again) and make sure the entry side of envelope rises within 3 second.

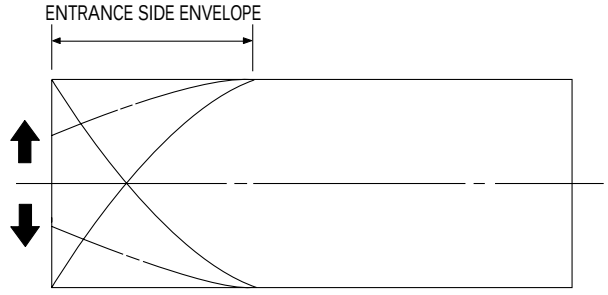


Fig. 5-12 Video Envelope Rising when Operation mode Changes from RPS to Play Mode

(4) Envelope Check

1) Make recordings on T-120 (E-120) and T-160 (E-180) tape.
   Make sure the playback output envelope meets the specification as shown in Fig. 5-13.
2) Play back a self recorded tape (recording made on the unit using with T-120 (E-120).
   The video envelope should meet the specification as shown in Fig. 5-13.
   In SP mode, (A) should equal (B).
   If the head gap is wide, upper cylinder should be checked.

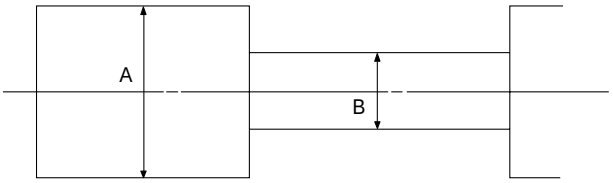


Fig. 5-13 Envelope Output and Output Level

(5) Tape Wrinkle Check

1) Run the T-160 (E-180) tape in the playback, FPS, RPS and Pause modes and observe tape wrinkle at each guide.
2) If excessive tape wrinkle is observed, perform the following adjustments in Playback mode :

- Tape wrinkle at the guide roller S, T section :
  Linearity adjustment.
- Tape wrinkle at tape guide flange :
  ACE head assembly coarse adjustment.

5-2-3 Reel Torque

1) The rotation of the capstan motor causes the holder clutch ass'y to rotat through the belt pulley.
2) The spring wrap PLAY/REV of holder clutch ass'y drives the disk reel S, T through gear idle by rotation of gear center ass'y.
3) Brake is operated by slider cam at FF/REW mode.
4) Transportation of accurate driving force is done by gears. (Gear Center Ass'y)

Note : If the spec. does not meet the followings specifications, replace the holder clutch ass'y and then recheck.

<Table 5-1>

MODE	TORQUE g/cm		GAUGE
PB	NTSC	82.5 ± 27.5	Cassette Torquemeter
	PAL	79 ± 27	
RPS	145 ± 30		Cassette Torquemeter

5-2-4 Location adjustment and Confirmation of Tension Post

1) Remove the holder cassette ass'y and then push the lever FL Arm-R to the direction of loading.
2) Push the lever tension drive ❶ in the direction of arrow. (See Fig. 5-14)
3) Turn the gear worm wheel ❷ clockwise so that "Timing Point" of the slider FL drive ❸ and gear FL cam ❹ can be aligned (See Fig. 5-14)

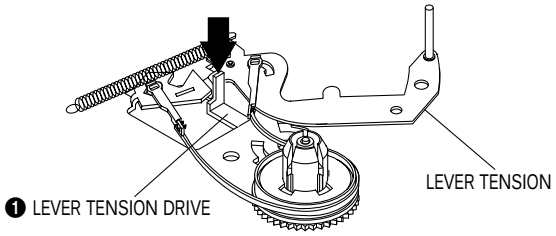


Fig. 5-14

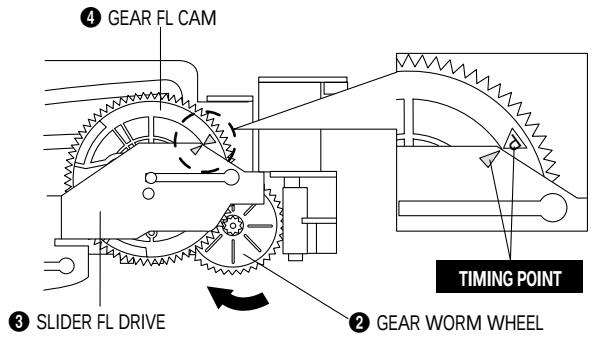


Fig. 5-15

4) As rotating Disk S Reel ❶ clockwise and the region of adjusting in the Main Base (in shape of slit) clockwise or counterclockwise after inserting screw driver in the slit on Main Base. Adjust the left end edge of Lever Tension Ass'y ❸ to 1.3 +1.5/-0.5mm from the location of mark in the Main Base.
5) As rotating Disk S Reel ❶, double-check the location of the left end edge of Lever Tension Ass'y and the quanity of crossing from mark on Main Base. (+1.0/-0.5mm)

Counterclockwise : Torque UP
Clockwise : Torque DOWN

Back Tension should be 56 ± 15g.cm at inspecting it with Back Tension Meter.

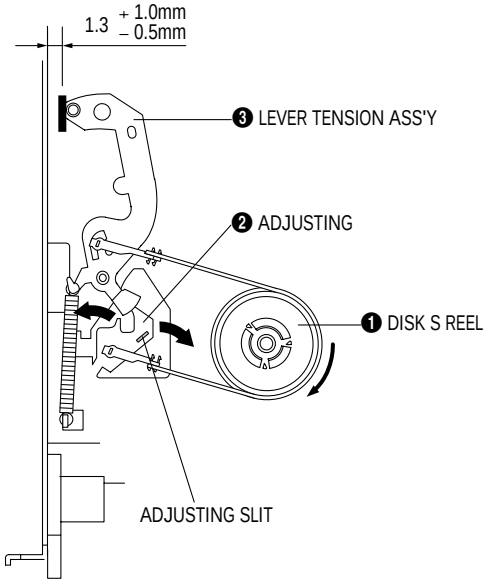


Fig. 5-16 Tension Pole and Back Tension Adjustment

Note :
1) Mark on Main Base is located in about 1.3mm from inside of bending line.
2) Be careful not to deform the region of adjusting on Main Base up and down at adjusting.

5-3 Head Switching Point Adjustment

1) Playback the alignment tape.
2) Intermittently short-circuit the two test points on Main PCB to set the adjustment mode. (See Fig. 5-2)
3) Press the “SP/SLP” button of remote control then adjustment is operated automatically. (See Fig. 5-1)
4) Turn the Power off.

5-4 NVRAM Option Setting

1) NVRAM Option is adjusted at production line basically.
2) In case Micom (IC601) and NVRAM (IC603 ; EEPROM) is replaced, be sure to set the corresponding ooption number of the repaired model. (If the option is not set, the unit is not operated.)

1) Intermittently short-circuit the two test points on Main PCB to set the adjustment mode. (See Fig. 5-2)
2) Press the “PROG.” button of remote control about 5 seconds then option setting display is appeared. (See Fig. 5-17)
3) Select the option number (See Table 5-2) of corresponding model with “FF” and “REW” button of remote control.
4) If selecting the option number is completed, press the “PLAY” button of remote control. (If “PLAY” button is pressed, the selected number is changes reversed color. ; See Fig. 5-17)
5) Press the “ENTER” button of remote control again to store the option number. (“SAVE” is displayed for a second as shown Fig. 5-18 this setting is completed.)
6) Turn the Power off.

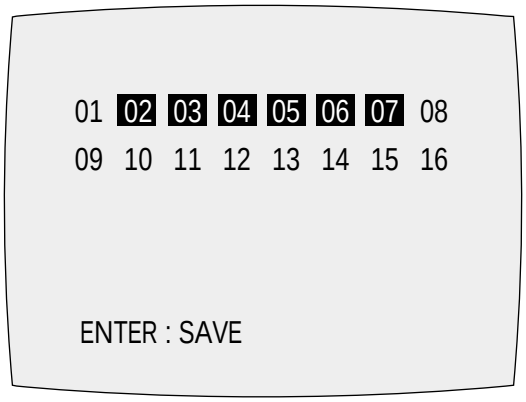


Fig. 5-17

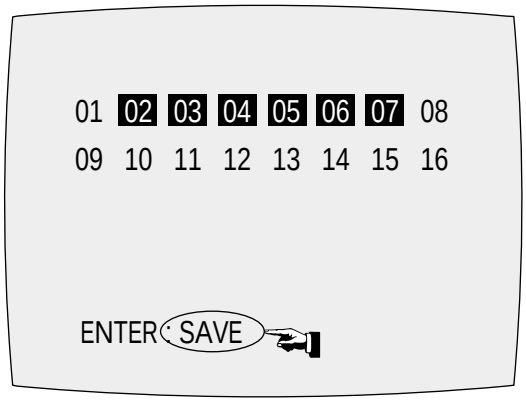


Fig. 5-18

<Table 5-2>

MODEL	TYPE	OPTION NUMBER
W-607	A	2, 3, 4, 6, 8, 9, 11, 16
	B	2, 3, 4, 6, 8, 9, 11
	C	2, 3, 4, 6, 8, 11, 16
	D	2, 3, 4, 6, 8, 11
	E	2, 3, 4, 6, 9, 11, 16
	F	2, 3, 4, 6, 9, 11
	G	2, 3, 4, 6, 11, 16
	H	2, 3, 4, 6, 11

How to identify the Type

Type	Assy-Cylinder		Capstan Motor		VR501	
	ALPS	SEM	Sankyo	SEM	Be	None
A	•		•			•
B	•		•		•	
C		•	•			•
D		•	•		•	
E	•			•		•
F	•			•	•	
G		•		•		•
H		•		•	•	

How to identify the Assy-Cylinder

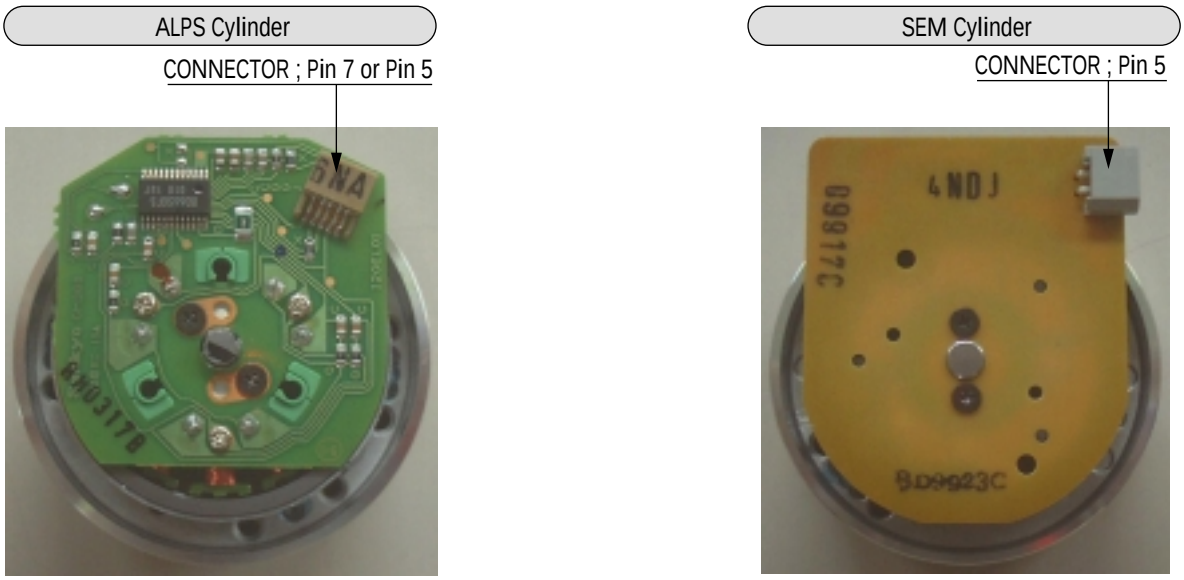


Fig. 5-19

How to identify the Capstan Motor

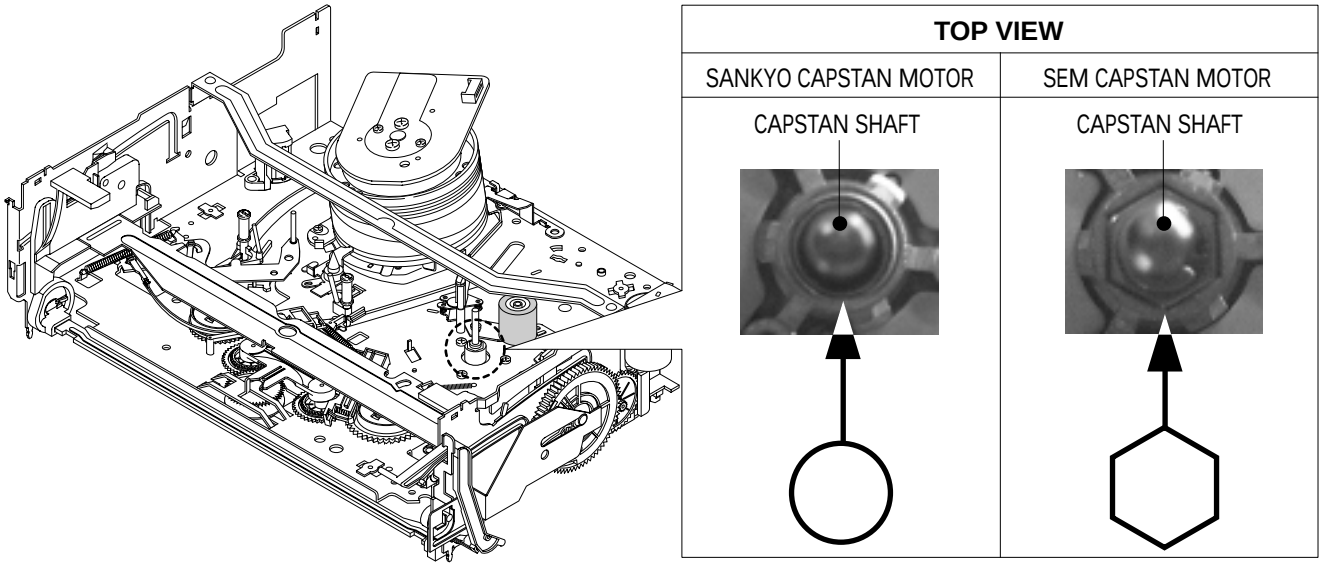


Fig. 5-20

Location for VR501

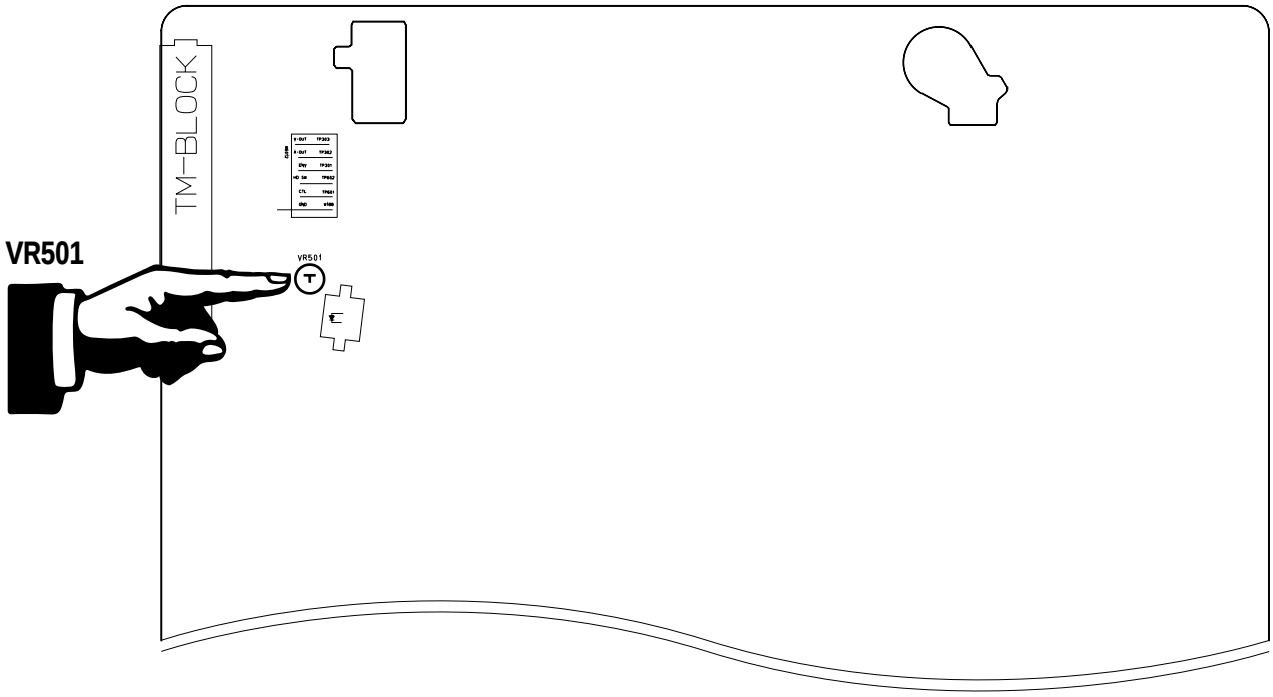


Fig. 5-21 Main PCB (Top View)

6. Exploded View

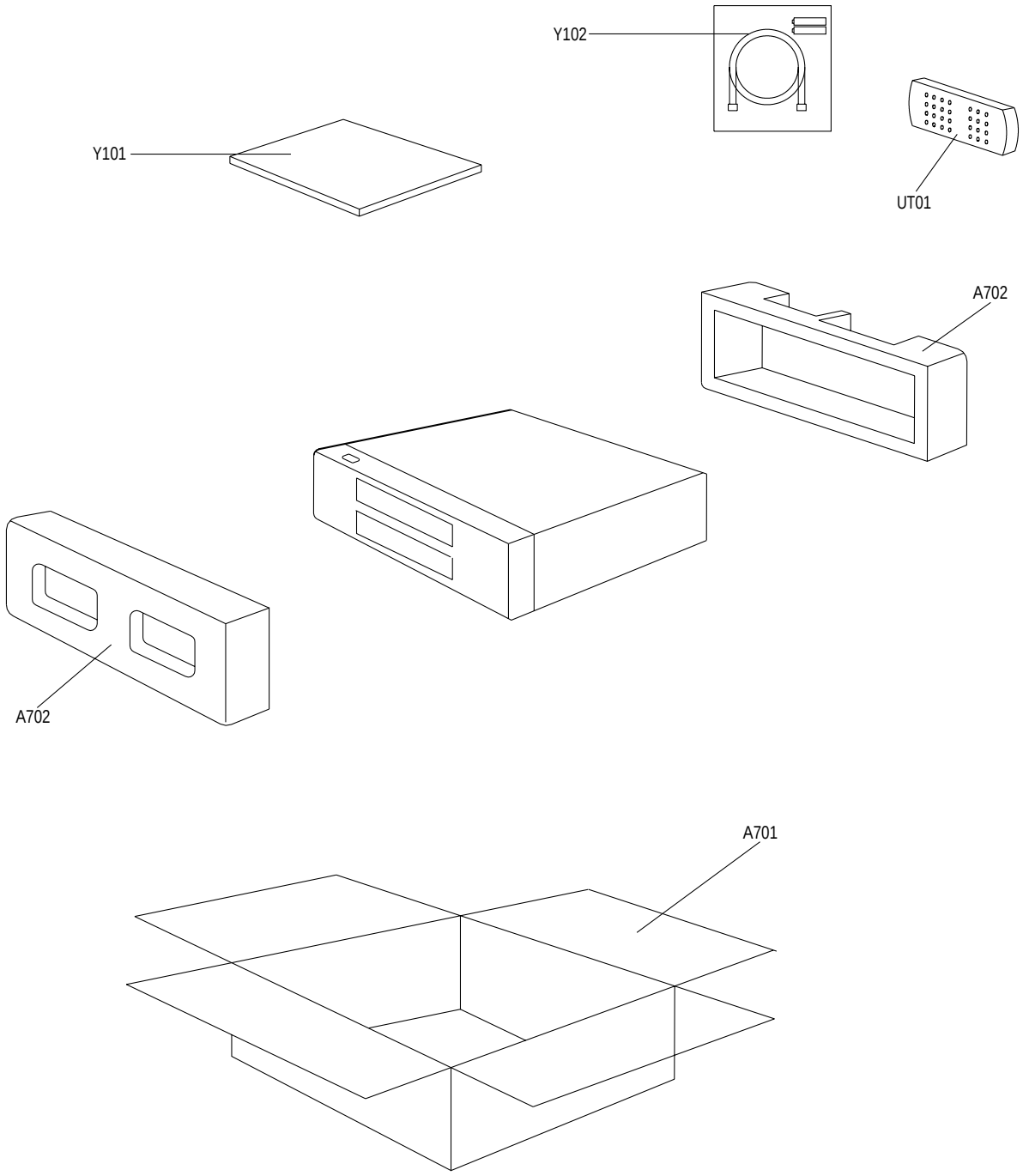
6-1 Packing Assembly - 6-2

6-2 Instrument Assembly - 6-3

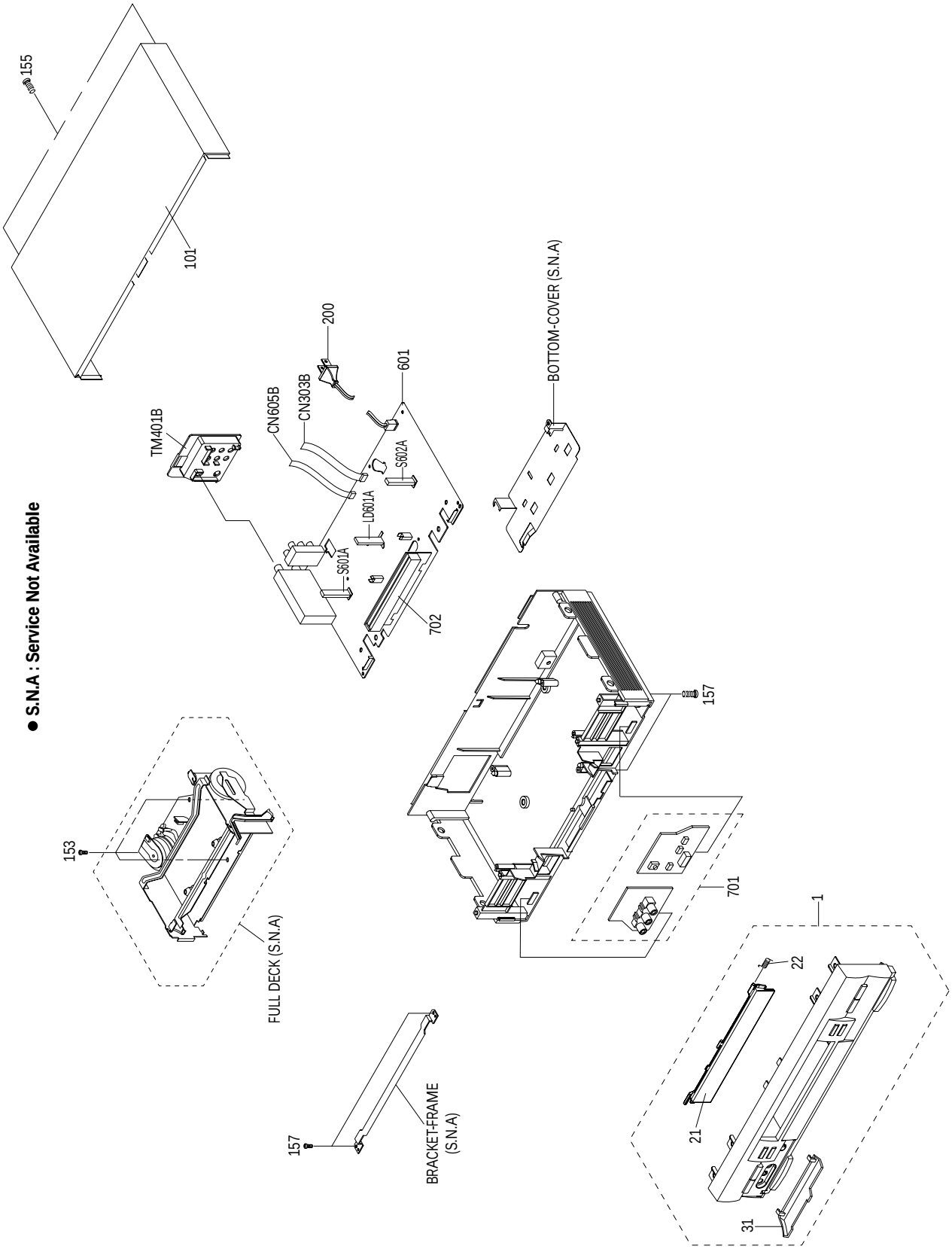
6-3 Mechanical Parts (Top Side) - 6-4

6-4 Mechanical Parts (Bottom Side) - 6-5

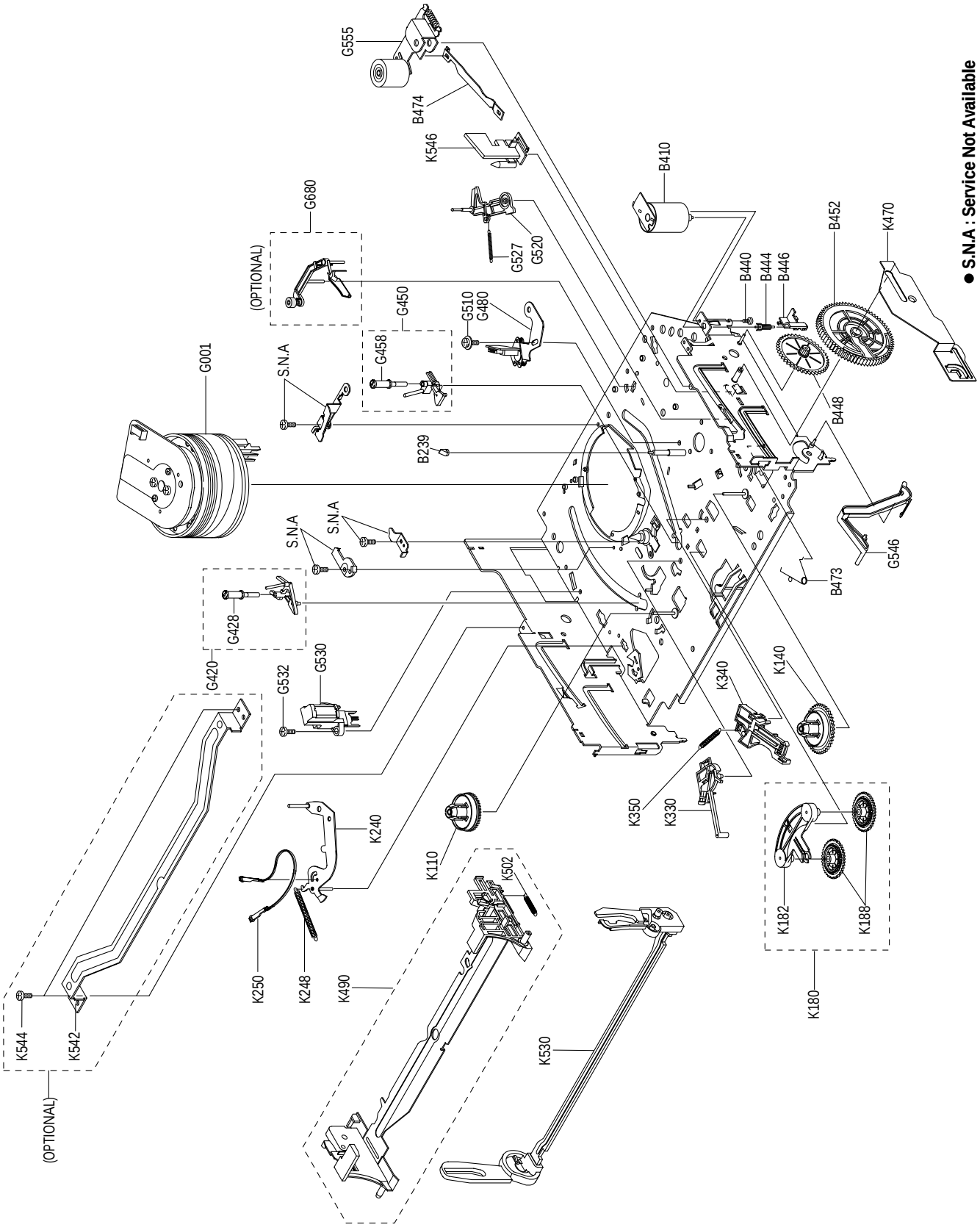
6-1 Packing Assembly



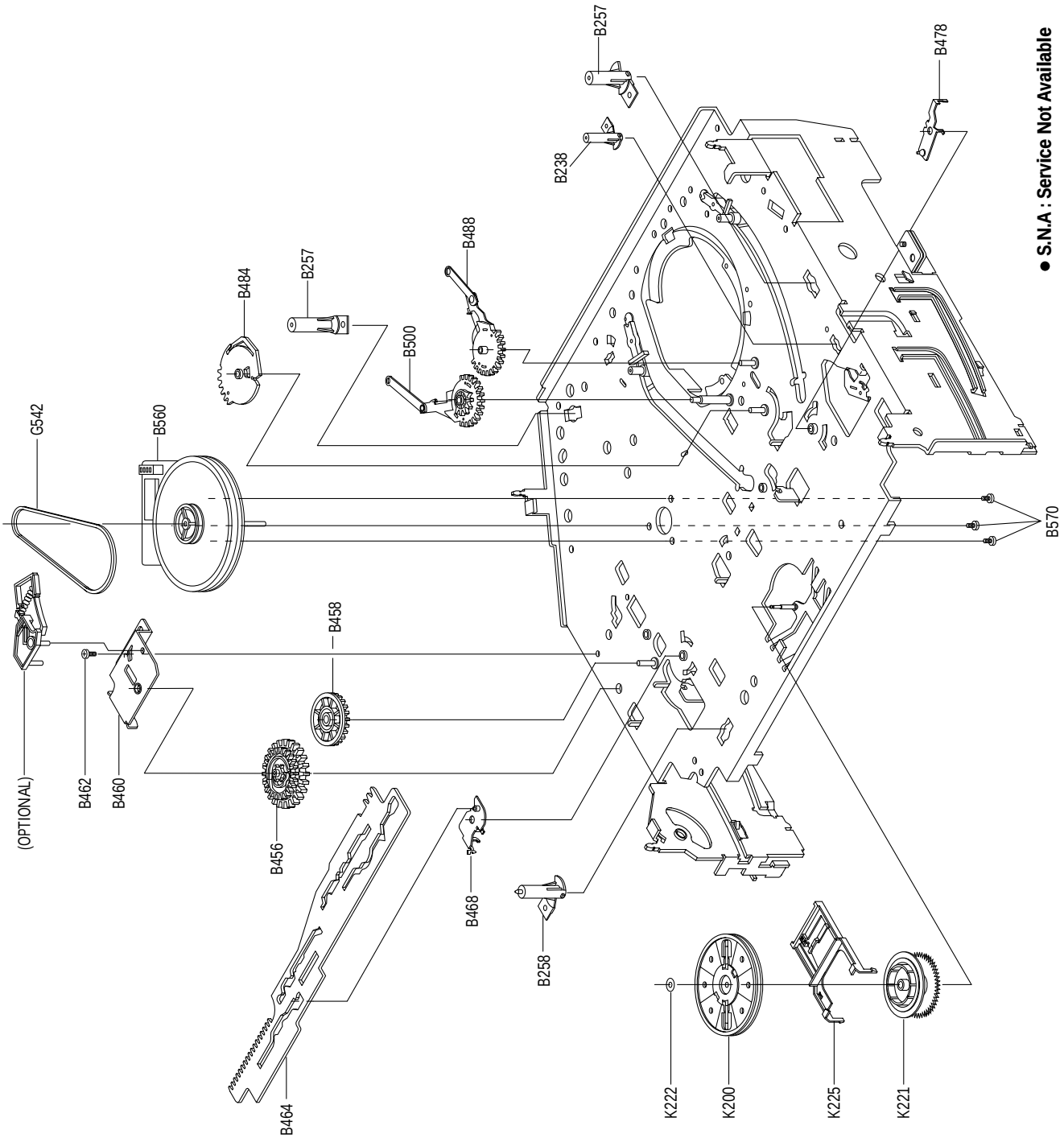
6-2 Instrument Assembly



6-3 Mechanical Parts (Top Side)



6-4 Mechanical Parts (Bottom Side)



7. Replacement Parts List

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
- PACKING PARTS -				
A701	BY730514	AC69-00055C	PACKING CASE;W-607/TSB,-,-,505,150,-,-,-	
A702	BY730463	AC69-00040A	CUSHION-F/B;M-686,EPS,-,-,-,-,-	
UT01	BY634287	AC59-10426C	REMOCON-ASSY;-,VC-607T,-,-,W-607,606,602	
Y101	BY634257	AC68-00554A	MANUAL-USERS;W-607/TSB,MOJO100,L185,W260	
Y102	BY634274	AC39-42001J	CABLE-RF ASSY;#1365,-,1.2MT,75-75OHM,-,-	
- INSTRUMENT PARTS -				
1	BY730502	AC97-00518C	ASSY-PANEL FRONT;W-607/TSB,HIPS94V2,D/GR	
21	BY730507	AC64-00127C	DOOR-CASSETTE;-,ABS94HB,-,T2.5,-,BLK,-,W	
22	BY730093	AC61-62032A	SPRING-MASK;X-9,-,SUS,-,4.4,-,S	
31	BY730459	AC64-00133A	DOOR-FRONT;-,ABS94HBGRY,-,-,-,G3019,-,W-	
101	BY730457	AC64-00124A	CABINET-TOP;-,PCM(SECC),-,T0.5,-,TM6524,	
153	70790218	AC60-12126A	SCREW-BH;-,BH,-,4*12,FE,FZY,-,-,-	
155	70790082	AC60-12134A	SCREW-TAP BH;-,BH,-,2-4X16,-,FE	
157	70790002	AC60-10063A	SCREW-TAPTITE;BH,+,-,M3,L12,ZPC3,SWRCH18	
200	BY634046	AC39-10200N	POWER-CORD;EP2,SPT-2,AWG#18,1.8MT,WAFER,	
CN303B	BY634042	3809-001110	CABLE-FLAT;30V,80C,150mm,7P,1.25mm,UL289	
CN605B	BY634043	3809-001112	CABLE-FLAT;30V,80C,130mm,5P,1.25mm,UL289	
LD601A	BY730082	AC61-21009A	HOLDER-LED;-,POM(M90-44),-,BLK,-,X-9	
S601A	BY730080	AC61-21008A	HOLDER-SENSOR;-,POM(M90-44),-,BLK,-,X-9	
S602A	BY730080	AC61-21008A	HOLDER-SENSOR;-,POM(M90-44),-,BLK,-,X-9	
TM401B	BY730499	AC61-00058A	CONNECTOR-BOARD-ASSY;-,HIPS,-,T2,61,-,BL	
- MECHANICAL PARTS -				
B238	BY730087	AC61-50660A	SLEEVE-TENSION;-,POM M90-44,-,-,ID3,-,-,	
B239	BY730234	AC61-21004A	CAP-#8 GUIDE;-,POM M90-44,-,NTR,-,X-9	
B257	BY730247	AC61-50661A	POST-MAIN PCB;-,POM M90-44,-,-,NTR,-,X-9	
B258	BY730266	AC61-50684A	GUIDE-MAIN PCB;-,POM,OD7,L20,-,BLACK,X-9	
B410	BY730456	AC31-12016D	MOTOR-LOADING ASSY;-,SNHNE,-,-	
B440	BY730072	AC60-10515A	SCREW-MACHINE;-,PH,+,-,M3,L3,ZPC,-,YEL	
B444	BY730104	AC66-20571A	GEAR-WORM;-,POM SW-01,0.5,2,-,4.5,X-9	
B446	BY730079	AC61-21005A	HOLDER-WORM;-,POM M90-44,-,-,-,X-9	
B448	BY730105	AC66-20573A	GEAR-WORM WHEEL;-,POM SW-01,0.6,11,-,6.6	
B452	BY730107	AC66-20575A	GEAR-FL CAM;-,POM SW-01,M0.6,Z88,-,PCD58	
B456	BY730108	AC66-20576A	GEAR-JOINT 1;-,POM SW-01,M1.0,Z22,-,PCD2	
B458	BY730106	AC66-20574A	GEAR-JOINT 2;-,POM SW-01,M1.0,Z14,-,PCD1	
B460	BY730447	AC61-11045A	BRACKET-GEAR;-,SECC20/20,-,T1.2,-,-,X-9	
B462	BY730073	AC60-10517A	SCREW-TAP TITE;-,PH,+,-,M2.6,L5,ZPC,-,YE	
B464	BY730381	AC66-80140A	SLIDER-CAM;-,SECC20/20,T1.2,-,-,X-9	
B468	BY730450	AC66-30541A	LEVER-PINCH DR ASSY;-,-,-,-,-,X-9	
B473	BY730090	AC61-60559A	SPRING-PINCH DRIVE;-,TS,SUS304,PI0.5,OD4	
B474	BY730244	AC61-30180A	PLATE-JOINT;-,SECC20/20,T0.8,-,X-9	
B478	BY730449	AC66-30540A	LEVER-TENS DR ASSY;-,-,-,-,-,X-9	
B484	BY730110	AC66-20580A	GEAR-LOADING DRIVE;-,POM SW-01,M1.0,Z32,	
B488	BY730117	AC66-30543A	LEVER-S LOAD ASSY;-,-,-,-,-,X-9	
B500	BY730116	AC66-30542A	LEVER-T LOAD ASSY;-,-,-,-,-,X-9	
B560	BY730654	AC31-00006A	MOTOR-CAPSTAN;-,DMVCMC07JR,-,-	
B570	BY730071	AC60-10514A	SCREW-CAPSTAN;-,PH,+,M2.6,L6,-	
G001	BY730655	AC97-00550A	ASSY-CYLINDER;CX-9TA,NTSC,6HD	
G420	BY730124	AC66-80142A	SLIDER-SUPPLY ASSY;-,X-9(TS),-,-,-,X-9	
G428	BY730451	AC66-40153A	ROLLER-SUPPLY ASSY;-,VW-32,OD7,-,X-9	
G450	BY730123	AC66-80141A	SLIDER-TAKE UP ASSY;-,X-9(TS),-,-,-,X-9	
G458	BY730452	AC66-40154A	ROLLER-TAKE UP ASSY;-,VW-32,OD7,-,X-9	
G480	BY730052	AC33-00003A	HEAD-ACE-ASSY;SHINHEUNG,-,-,-,-,X-9	
G510	BY730479	6006-001075	SCREW-ASS'Y TAPT;WSP,PH,+,M2.6,L5.0,ZPC(	
G520	BY730115	AC66-30539A	LEVER-#9 GUIDE ASSY;-,X-9(TS),-,-,-,X-9	
G527	BY730088	AC61-60553A	SPRING-#9 GUIDE;-,ES,SUS304-WPB,OD3.1,0.	
G530	BY730053	AC33-00002A	HEAD-FE;-,HVFHP0038A,-,-,-,X-9	
G532	BY730075	AC60-10519A	SCREW-TAP TITE;-,PH,+,-,M2.6,L8,ZPC	
G542	BY730122	AC66-60051A	BELT-PULLEY;-,5CM-70,2 * 2,-,71.3,-,X-9	
G546	BY730113	AC66-30535A	LEVER-FL DOOR;-,POM M90-44,-,-,BLK,X-9	
G555	BY730070	AC59-90403A	UNIT-PINCH ASSY;X-9,-	
G680	BY730372	AC66-30557A	LEVER-H/CLEANER ASSY;-,POM+URETHANE,-,-,	
K110	BY730102	AC66-10267A	REEL-DISK S;-,POM M90-44,-,-,X-9	
K140	BY730103	AC66-10268A	REEL-DISK T;-,POM M90-44,-,-,X-9	
K180	BY730369	AC66-30548A	LEVER-IDLER ASSY;-,POM+NYLON,-,-,-,X-9	
K182	BY730112	AC66-30524A	LEVER-IDLER;-,POM9044,-,-,-,-	
K188	BY730109	AC66-20577A	GEAR-IDLER;-,PEBAX 7033,-,-,-,-,X-9	
K200	BY730084	AC61-21012A	HOLDER-CLUTCH ASSY;-,-,-,-,-,X-9	
K221	BY730111	AC66-20581A	GEAR-CENTER ASSY;-,POM,M=O.5,-,HIGHT T.,	
K222	BY730076	AC60-30306A	WASHER-SLIT;-,-,ID2.1,OD5.0,T0.5,-,POLYS	

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
K225	BY730119	AC66-30547A	LEVER-UP DOWN ASSY;-,POM+SUS,-,-,-,X-9	
K240	BY730114	AC66-30538A	LEVER-TENSION ASSY;-,X-9(TS),-,-,-,X-9	
K248	BY730089	AC61-60554A	SPRING-TENSION LEVER;-,ES,SUS304-WPB,OD3	
K250	BY730094	AC63-12029A	BAND-BRAKE ASSY;-,X-9(TS),-,-,-,X-9	
K330	BY730121	AC66-30550A	LEVER-S.BRAKE ASSY;-,POM+SUS,-,-,-,X-9	
K340	BY730120	AC66-30549A	LEVER-T.BRAKE ASSY;-,POM+SUS,-,-,-,X-9	
K350	BY730092	AC61-60564A	SPRING-BRAKE;-,TENSION,SWP-A,0.25,3,-,X-	
K470	BY730454	AC66-80139A	SLIDER-FL DRIVE;-,SECC E20/20,T1.2,-,-,X	
K490	BY730083	AC61-21010B	HOLDER-CASS ASSY;-,SECC+POM+SUS,-,-,SEIN	
K502	BY730091	AC61-60561A	SPRING-FL.LEVER-LR;-,ES,SUS304 WPB,PI2.7	
K530	BY730118	AC66-30546A	LEVER-FL.ARM ASS'Y;-,SECC+POM+SUS,-,-,-,	
K546	BY730086	AC61-50658A	GUIDE-CASS. DOOR;-,POM M90-44,-,-,NTR,-,	
- ELECTRICAL PARTS -				
702	BY630094	AC94-00038B	ASSY-TIMER-VFD;W-609/TSB,TWIN,HI-FI,20 T	
701	BY630093	AC94-00037B	ASSY-FUNCTION;W-607/TSB,TWIN,HI-FI,20 TS	
601	BY630104	AC92-00491A	ASSY-PCB-MAIN;W-607/TSB,MAIN	
<INTERGRATED CIRCUIT>				
IC1SS1	BY530004	0604-001028	PHOTO-COUPLER;TR,50-600%,250mW,DIP-4,ST	⚠
IC1SS2	BY631008	AC14-12006D	IC;KA431Z,TO-92,TAPING	
IC301	BY631088	1204-001644	IC-VIDEO PROCESS;LA71069M,QFP,100P,-,PLA	
IC501	BY631089	1209-001264	IC-ETC, LINEAR;AN3662FBP,QFP,64P,551MIL,	
IC601	BY631101	AC09-00098A	IC-MICOM;MN101D02D-CC1,MN101D02D-CC1,10	
IC602	BY631022	1003-001162	IC-MOTOR DRIVER;KA3082,SIP,10PIN,25MIL,D	
IC603	BY631095	1103-001149	IC-EEPROM;24C041,4KBIT,DIP,8P,300MIL,10M	
IC6B1	70795269	AC14-12006C	IC;KA7533,DIP,-	
<TRANSISTORS>				
Q1P101	70693265	0501-000616	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1W,TO-92L	
Q1P102	70693265	0501-000616	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1W,TO-92L	
Q1P103	70693084	0504-000142	TR-DIGITAL;KSR2001,PNP,300MW,4.7K/4.7K,T	
Q1P104	70795136	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q1P105	70795136	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q1P107	70693265	0501-000616	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1W,TO-92L	
Q1P108	70693084	0504-000142	TR-DIGITAL;KSR2001,PNP,300MW,4.7K/4.7K,T	
Q1P109	70795136	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q1SR01	70795142	0501-000442	TR-SMALL SIGNAL;KTC3203-Y,NPN,400MW,T0-9	
Q1SR02	BY530002	0502-001123	TR-POWER;KTC4419,NPN,30W,TO-220,ST,10-4	
Q302	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q303	70795136	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q304	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q305	70795142	0501-000442	TR-SMALL SIGNAL;KTC3203-Y,NPN,400MW,T0-9	
Q306	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q307	70795142	0501-000442	TR-SMALL SIGNAL;KTC3203-Y,NPN,400MW,T0-9	
Q308	70795142	0501-000442	TR-SMALL SIGNAL;KTC3203-Y,NPN,400MW,T0-9	
Q311	70795136	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q501	70795142	0501-000442	TR-SMALL SIGNAL;KTC3203-Y,NPN,400MW,T0-9	
Q6H01	70693410	0501-000610	TR-SMALL SIGNAL;KSA928A-Y,PNP,1W,TO-92L,	
Q6H02	70795137	0504-000116	TR-DIGITAL;KSR1001,NPN,300MW,4.7K/4.7K,T	
Q701	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q702	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q703	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q704	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q705	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q706	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q707	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q708	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q709	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q710	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q711	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q712	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q713	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q714	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q715	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q716	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q801	70795134	0501-000303	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
<DIODES>				
D1P101	BY430003	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
D1P102	70796385	0402-000127	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P104	BY430003	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
D1P107	BY430003	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
D1P108	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D1P109	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D1SD01	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D1SD02	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D1SR01	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D1SR02	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
D1SS01	BY430012	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	
D1SS02	BY430012	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	
D1SS03	BY430012	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	
D1SS04	BY430012	0402-001196	DIODE-RECTIFIER;1T5,600V,1A,TS-1,TP	
D1SS05	BY430008	0402-000276	DIODE-RECTIFIER;UF4007,1KV,1A,DO-41,TP	
D1SS06	BY430010	0402-001194	DIODE-RECTIFIER;UG2D,200V,2A,DO-204AC,TP	
D1SS07	BY430009	0402-000431	DIODE-RECTIFIER;FML-M02S,200V,2.5A,TO-22	
D304	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D503	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D601	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D603	BY430003	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
D604	BY430003	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
D605	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D607	BY430003	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
D6H01	BY430011	0402-001195	DIODE-RECTIFIER;F1T4,400V,1.0A,TS-1,TP	
D702	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D703	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D704	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D705	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D707	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D708	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D7F01	BY430011	0402-001195	DIODE-RECTIFIER;F1T4,400V,1.0A,TS-1,TP	
D7FR01	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
D7FR02	70795150	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
FL301	BY330006	AC27-80100C	COIL-OSC;7mm,2.4mH,-	
W038	70796385	0402-000127	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
ZD1P01	70795272	0403-000390	DIODE-ZENER;UZP33B,33V,31.4-34.6V,1W,DO-	
ZD1P03	BY430013	0403-000720	DIODE-ZENER;MTZJ9.1B,9.1V,8.57-9.01V,500	
ZD1P05	BY430015	0403-001211	DIODE-ZENER;MTZJ12B,11.44-12.03V,500MW,D	
ZD1SR1	70795438	0403-000571	DIODE-ZENER;UZP43B,43V,40-46V,1W,DO-41,T	
ZD7FT1	BY430004	0403-000509	DIODE-ZENER;MTZJ5.6B,5.6V,5.45-5.73V,500	
ZD7FT2	BY430014	0403-001141	DIODE-ZENER;MTZJ24D,24V,23.63-24.85V,500	
<INDUCTORS>				
BD1SR1	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
BD1SS1	70795644	AC27-92001M	INDUCTOR;70UH-M RT BFS3565R2F,-,-,-,-	
BD6H01	70795644	AC27-92001M	INDUCTOR;70UH-M RT BFS3565R2F,-,-,-,-	
L1P101	BY330009	2701-000002	INDUCTOR-AXIAL;100uH,10%,4.2x9.8mm	
L1P102	BY330009	2701-000002	INDUCTOR-AXIAL;100uH,10%,4.2x9.8mm	
L1SS01	BY330008	AC29-30050C	FILTER-LINE NOISE;-,25MH,0.35A,AC250V,BS	⚠
L1SS02	70796213	AC27-12001N	COIL-CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	
L1SS03	70796213	AC27-12001N	COIL-CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	
L301	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L302	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L303	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L304	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L305	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L306	70795171	2702-000120	INDUCTOR-RADIAL;15mH,5%,6.2x7.4mm	
L307	70795168	2702-000108	INDUCTOR-RADIAL;100uH,5%,6x6.4mm	
L501	70795168	2702-000108	INDUCTOR-RADIAL;100uH,5%,6x6.4mm	
L502	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L503	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L504	BY330046	2701-000126	INDUCTOR-AXIAL;150uH,5%,2.4x3.4mm	
L601	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
L801	70796362	2701-000168	INDUCTOR-AXIAL;3.3uH,5%,2.5x3.4mm	
L802	BY330019	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
LD601	BY430016	0601-000517	LED-IR;RECTANGULA,4x6.0mm,75mW,6V,950	
<CAPACITROS>				
C1P101	BY130017	2401-001730	C-AL;10uF,20%,50V,GP,TP,5x11,2.5	
C1P103	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C1P104	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C1P105	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C1P106	BY130249	2401-002008	C-AL;100uF,20%,16V,GP,TP,6.3x11,2.5	
C1P108	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C1P112	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C1SD01	BY130218	2201-000445	C-CERAMIC,DISC;3.3nF,20%,400V,Y5P,TP,-,1	⚠
C1SD06	BY130270	2301-000423	C-FILM,PEF;3.3NF,5%,100V,TP,7X10X4.5MM,5	
C1SR01	70795578	2401-001681	C-AL;82uF,20%,200V,GP,TP,16x26,7.5m	
C1SR02	70795430	2401-000905	C-AL;22uF,20%,16V,BP,-,6x11,2.5mm	
C1SR03	BY130046	2401-001235	C-AL;4.7uF,20%,250V,WT,TP,10x12.5,5	
C1SR04	70795586	2301-000417	C-FILM,PEF;24nF,5%,50V,TP,6.5x10.5x4mm,5	
C1SR05	70796231	2301-000176	C-FILM,PEF;18nF,5%,100V,TP,10X9X4.3X5,5m	
C1SR06	70795088	2201-000930	C-CERAMIC,DISC;0.22nF,10%,500V,Y5P,TP,5.	
C1SR07	70795239	2201-000795	C-CERAMIC,DISC;10nF,10%,400V,Y5P,TP,15x1	⚠
C1SS04	70795404	2201-000916	C-CERAMIC,DISC;100pF,10%,400V,Y5U,TP,10x	
C1SS06	70795431	2401-000385	C-AL;10uF,20%,100V,GP,TP,6.3x11,5	
C1SS07	70796014	2401-002162	C-AL;1000uF,20%,25V,WT,TP,10x20,5mm	
C1SS08	BY130045	2401-001126	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
C1SS10	70796210	2401-000118	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	
C1SS11	70796098	2301-000129	C-FILM,PEF;100nF,5%,50V,TP,10X9X4.3X5,5m	
C1SS35	BY130050	2401-003059	C-AL;1000UF,20%,16V,WT,TP,10X16,5	
C301	BY130191	2203-000476	C-CERAMIC,CHIP;1000nF,+80-20%,16V,Y5V,TP	
C302	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C303	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C304	BY130031	2203-001721	C-CERAMIC,CHIP;360pF,5%,50V,NPO,TP,2012,	
C305	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C306	70795462	2203-001584	C-CERAMIC,CHIP MELF;180PF,10%,50V,Y5E,TP	
C307	70795253	2203-001637	C-CERAMIC,CHIP MELF;33PF,5%,50V,SL,TP,20	
C309	70699092	2401-000918	C-AL;22uF,20%,16V,GP,-,6.3x7,5	
C310	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C311	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C312	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C313	BY130037	2203-005547	C-CERAMIC,CHIP MELF;22nF,+80-20%,16V,Y5V	
C314	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C315	BY130191	2203-000476	C-CERAMIC,CHIP;1000nF,+80-20%,16V,Y5V,TP	
C316	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C317	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C318	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C319	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C320	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C321	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C322	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C323	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C324	BY130280	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C325	BY130191	2203-000476	C-CERAMIC,CHIP;1000nF,+80-20%,16V,Y5V,TP	
C326	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C327	BY130020	2203-000989	C-CERAMIC,CHIP;47nF,10%,50V,X7R,TP,2012	
C328	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C329	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C330	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C331	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C332	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C333	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C334	BY130020	2203-000989	C-CERAMIC,CHIP;47nF,10%,50V,X7R,TP,2012	
C335	BY130020	2203-000989	C-CERAMIC,CHIP;47nF,10%,50V,X7R,TP,2012	
C336	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C337	BY130049	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C338	70699092	2401-000918	C-AL;22uF,20%,16V,GP,-,6.3x7,5	
C339	BY130049	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C340	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C341	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C342	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C343	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C344	70796286	2203-001689	C-CERAMIC,CHIP MELF;8.2NF,30%,16V,Y5S,BK	
C345	BY130041	2301-001014	C-FILM,PEF;6.8nF,5%,50V,TP,7x3x6,5mm	
C346	70796281	2203-000260	C-CERAMIC,CHIP;10nF,10%,50V,X7R,TP,2012	
C349	70795254	2203-001671	C-CERAMIC,CHIP MELF;56PF,5%,50V,Y5E,TP,2	
C350	BY130049	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C351	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C352	BY130145	2301-000253	C-FILM,PEF;39NF,5%,100V,TP,7.5X4.5X12.5M	
C353	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C356	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C357	BY130017	2401-001730	C-AL;10uF,20%,50V,GP,TP,5x11,2.5	
C358	BY130147	2203-000170	C-CERAMIC,CHIP;1.8nF,10%,50V,X7R,TP,2012	
C359	70795753	2203-001058	C-CERAMIC,CHIP;0.56nF,5%,50V,NP0,TP,2012	
C360	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C361	BY130191	2203-000476	C-CERAMIC,CHIP;1000nF,+80-20%,16V,Y5V,TP	
C362	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C363	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C364	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C365	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C366	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C371	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C401	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C403	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C405	BY130049	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C406	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C407	BY130037	2203-005547	C-CERAMIC,CHIP MELF;22nF,+80-20%,16V,Y5V	
C409	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C410	70693249	2202-000807	C-CERAMIC,MLC-AXIAL;22nF,+80-20%,25V,Y5V	
C501	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C502	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C503	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C504	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C505	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C506	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C507	BY130250	2401-002068	C-AL;33uF,20%,16V,GP,TP,5x11,5	

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
C508	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C509	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C510	BY130082	2301-000224	C-FILM,PEF;22nF,5%,50V,TP,7.4x3.9x13mm,5	
C511	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C512	BY130192	2203-001550	C-CERAMIC,CHIP;1.2nF,10%,50V,X7R,TP,2012	
C513	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C514	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C515	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C516	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C517	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C518	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C519	72531485	2401-001931	C-AL;220nF,20%,50V,-,TP,4x7mm,5	
C520	BY130082	2301-000224	C-FILM,PEF;22nF,5%,50V,TP,7.4x3.9x13mm,5	
C521	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C522	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C523	BY130250	2401-002068	C-AL;33uF,20%,16V,GP,TP,5x11,5	
C526	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C527	72531485	2401-001931	C-AL;220nF,20%,50V,-,TP,4x7mm,5	
C528	BY130159	2401-001020	C-AL;3.3UF,20%,50V,GP,TP,4X7,5	
C529	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C530	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C531	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C532	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C533	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C534	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C535	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C536	70795769	2401-001919	C-AL;2.2uF,20%,50V,-,TP,4x7mm,5	
C537	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C538	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C540	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C541	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C542	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C543	BY130082	2301-000224	C-FILM,PEF;22nF,5%,50V,TP,7.4x3.9x13mm,5	
C544	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C546	BY130020	2203-000989	C-CERAMIC,CHIP;47nF,10%,50V,X7R,TP,2012	
C547	BY130020	2203-000989	C-CERAMIC,CHIP;47nF,10%,50V,X7R,TP,2012	
C548	BY130017	2401-001730	C-AL;10uF,20%,50V,GP,TP,5x11,2.5	
C601	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C602	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C603	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C604	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C605	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C606	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C607	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C608	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C609	70796336	2203-000323	C-CERAMIC,CHIP;12nF,10%,50V,X7R,TP,2012,	
C610	BY130020	2203-000989	C-CERAMIC,CHIP;47nF,10%,50V,X7R,TP,2012	
C611	BY130350	2202-000253	C-CERAMIC,MLC-AXIAL;4.7nF,20%,16V,Y5R,TP	
C612	70795240	2203-001577	C-CERAMIC,CHIP MELF;150PF,10%,50V,Y5E,TP	
C613	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C614	BY130280	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C615	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C616	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C617	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C618	70795463	2203-001612	C-CERAMIC,CHIP MELF;22PF,5%,50V,SL,TP,20	
C619	70795750	2203-001620	C-CERAMIC,CHIP MELF;.027NF,5%,50V,SL,BK,	
C620	70795750	2203-001620	C-CERAMIC,CHIP MELF;.027NF,5%,50V,SL,BK,	
C621	70795463	2203-001612	C-CERAMIC,CHIP MELF;22PF,5%,50V,SL,TP,20	
C622	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C623	BY130069	2202-000121	C-CERAMIC,MLC-AXIAL;100pF,10%,50V,Y5P,TP	
C624	BY130280	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C625	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C626	BY130191	2203-000476	C-CERAMIC,CHIP;1000nF,+80-20%,16V,Y5V,TP	
C627	70796209	2203-001696	C-CERAMIC,CHIP MELF;82PF,10%,50V,Y5P,TP,	
C628	BY130250	2401-002068	C-AL;33uF,20%,16V,GP,TP,5x11,5	
C629	BY130038	2203-005548	C-CERAMIC,CHIP MELF;15nF,+80-20%,16V,Y5V	
C630	BY130049	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C631	70796207	2203-001557	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
C632	70795254	2203-001671	C-CERAMIC,CHIP MELF;56PF,5%,50V,Y5E,TP,2	
C633	BY130035	2203-005544	C-CERAMIC,CHIP MELF;3.3nF,20%,12V,Y5S,TP	
C634	70795254	2203-001671	C-CERAMIC,CHIP MELF;56PF,5%,50V,Y5E,TP,2	
C635	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C636	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C637	BY130009	2401-001545	C-AL;47uF,20%,25V,GP,TP,6.3x7mm,2.5	
C638	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C639	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C640	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C642	BY130020	2203-000989	C-CERAMIC,CHIP;47nF,10%,50V,X7R,TP,2012	
C643	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	

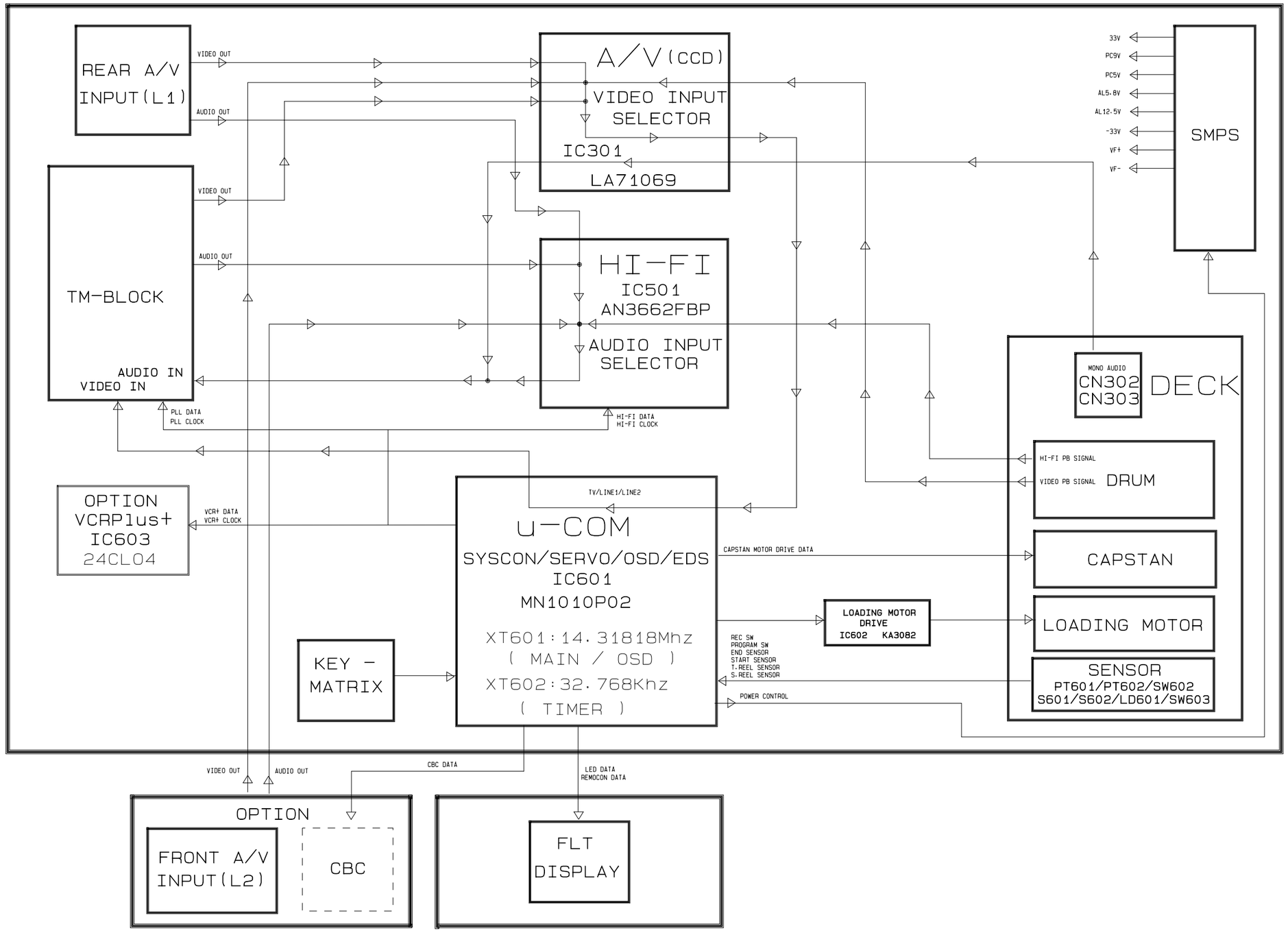
Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
C644	BY130039	2203-005549	C-CERAMIC,CHIP MELF;10nF,+80-20%,16V,Y5V	
C6B01	70699061	2401-000199	C-AL;1000uF,20%,6.3V,GP,TP,10x12.5,	
C6H01	BY130187	2401-003137	C-AL;330UF,20%,50V,WT,TP,10X16MM,5	
C6H02	BY130042	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C7F01	BY130225	2401-001353	C-AL;470uF,20%,10V,GP,TP,8x11.5,5	
C7F02	BY130281	2401-003046	C-AL;47uF,20%,50V,WT,TP,6.3x11,2.5	
C7F03	70795585	2301-000383	C-FILM,PEF;10nF,5%,50V,TP,6x7x3.2mm,5mm	
C7FT01	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C7FT02	BY130262	2202-000173	C-CERAMIC,MLC-AXIAL;1nF,10%,50V,Y5P,TP,1	
C7FT03	BY130280	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C7FT04	70795075	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C7FT05	BY130136	2401-002299	C-AL;4.7uF,20%,50V,GP,TP,5x7,5	
C801	BY130049	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C802	BY130225	2401-001353	C-AL;470uF,20%,10V,GP,TP,8x11.5,5	
C803	BY130217	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
C804	70693215	2202-000787	C-CERAMIC,MLC-AXIAL;10PF,5%,50V,Y5P,TP,3	
C805	BY130017	2401-001730	C-AL;10uF,20%,50V,GP,TP,5x11,2.5	
C8F1	BY130027	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C8F2	BY130273	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
W1SR04	BY130216	2201-000812	C-CERAMIC,DISC;2.2nF,20%,400V,Y5U,BK,12.	
<RESISTORS>				
R1P101	70795358	2001-000857	R-CARBON;560OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P102	70795210	2007-001584	R-CHIP,MELF;2.2Kohm,5%,1/8W,DB,BK,2012	
R1P104	70795025	2001-000554	R-CARBON;270OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P110	70796067	2001-000362	R-CARBON;150OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1SD01	70796356	2001-000490	R-CARBON;200OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1SD02	70795019	2001-000515	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1SD03	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1SR01	70795002	2002-000320	R-COMPOSITION;1.8Mohm,10%,1/2W,AA,TP,3.5	⚠
R1SR02	BY230018	2003-002117	R-METAL OXIDE(S);330Kohm,5%,1W,AA,TP,3.3	
R1SR03	BY230016	2003-000314	R-METAL OXIDE;47ohm,5%,2W,AE,TP,6x16mm	
R1SR04	BY230016	2003-000314	R-METAL OXIDE;47ohm,5%,2W,AE,TP,6x16mm	
R1SR05	70795030	2001-000003	R-CARBON;330ohm,5%,1/8W,AA,TP,1.8x3.2mm	
R1SR06	70796275	2003-000119	R-METAL OXIDE;0.68ohm,5%,2W,AE,TP,6x16mm	
R1SR07	70795040	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1SS01	BY230027	2003-000994	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	
R1SS02	BY230027	2003-000994	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	
R1SS04	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1SS05	70795640	2004-000869	R-METAL;3Kohm,1%,1/8W,AA,TP,1.8x3.2mm	
R1SS06	70795638	2004-000459	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	
R301	70796181	2007-001553	R-CHIP,MELF;2Kohm,5%,1/8W,DB,BK,2012	
R302	70795221	2007-001513	R-CHIP,MELF;4.7KOHM,5%,1/8W,DB,BK,2012	
R303	70796179	2007-001633	R-CHIP,MELF;1.5Kohm,5%,1/8W,DB,BK,2012	
R304	70796191	2007-001555	R-CHIP,MELF;27Kohm,5%,1/8W,DB,BK,2012	
R308	BY230006	2007-001561	R-CHIP,MELF;24Kohm,5%,1/8W,DB,BK,2012	
R309	70795232	2007-001568	R-CHIP,MELF;22Kohm,5%,1/8W,DB,BK,2012	
R310	70795225	2007-001458	R-CHIP,MELF;8.2KOHM,5%,1/8W,DB,BK,2012	
R311	70795221	2007-001513	R-CHIP,MELF;4.7KOHM,5%,1/8W,DB,BK,2012	
R313	70795020	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R314	BY230028	2007-001456	R-CHIP,MELF;820KOHM,5%,1/8W,DB,BK,2012	
R315	70796179	2007-001633	R-CHIP,MELF;1.5Kohm,5%,1/8W,DB,BK,2012	
R316	70795213	2007-001629	R-CHIP,MELF;1.8Kohm,5%,1/8W,DB,BK,2012	
R317	70796179	2007-001633	R-CHIP,MELF;1.5Kohm,5%,1/8W,DB,BK,2012	
R318	70795225	2007-001458	R-CHIP,MELF;8.2KOHM,5%,1/8W,DB,BK,2012	
R320	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R326	70795023	2001-000454	R-CARBON;2.2MOHM,5%,1/8W,AA,TP,1.8X3.2M	
R327	70795205	2007-001546	R-CHIP,MELF;3.9Kohm,5%,1/8W,DB,BK,2012	
R329	70795238	2007-001517	R-CHIP,MELF;3KOHM,5%,1/8W,DB,BK,2012	
R330	BY230019	2001-000221	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R331	70795447	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R332	70796194	2007-001448	R-CHIP,MELF;9.1KOHM,5%,1/8W,DB,BK,2012	
R334	70795232	2007-001568	R-CHIP,MELF;22Kohm,5%,1/8W,DB,BK,2012	
R335	70796198	2007-001505	R-CHIP,MELF;470OHM,5%,1/8W,DB,BK,2012	
R336	70795213	2007-001629	R-CHIP,MELF;1.8Kohm,5%,1/8W,DB,BK,2012	
R337	70796373	2007-001582	R-CHIP,MELF;2.2ohm,5%,1/8W,DB,BK,2012	
R338	70795607	2001-000405	R-CARBON;180OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R339	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R340	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R341	70795232	2007-001568	R-CHIP,MELF;22Kohm,5%,1/8W,DB,BK,2012	
R342	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R344	70795011	2001-000331	R-CARBON;12KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R345	70795019	2001-000515	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R346	70795209	2007-001534	R-CHIP,MELF;33KOHM,5%,1/8W,DB,BK,2012	
R347	70795208	2007-001589	R-CHIP,MELF;1Kohm,5%,1/8W,DB,BK,2012	
R348	70795221	2007-001513	R-CHIP,MELF;4.7KOHM,5%,1/8W,DB,BK,2012	
R349	70795224	2007-001495	R-CHIP,MELF;510OHM,5%,1/8W,DB,BK,2012	
R350	70795224	2007-001495	R-CHIP,MELF;510OHM,5%,1/8W,DB,BK,2012	
R352	70795215	2007-001497	R-CHIP,MELF;5.6KOHM,5%,1/8W,DB,BK,2012	

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
R353	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R354	70796278	2007-001538	R-CHIP,MELF;330KOHM,5%,1/8W,DB,BK,2012	
R355	70795208	2007-001589	R-CHIP,MELF;1Kohm,5%,1/8W,DB,BK,2012	
R356	70795234	2007-001572	R-CHIP,MELF;220Kohm,5%,1/8W,DB,BK,2012	
R357	70795234	2007-001572	R-CHIP,MELF;220Kohm,5%,1/8W,DB,BK,2012	
R358	70795216	2007-001601	R-CHIP,MELF;15Kohm,5%,1/8W,DB,BK,2012	
R359	70795029	2001-000633	R-CARBON;30KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R360	70795058	2001-000977	R-CARBON;8.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R361	BY230020	2007-001499	R-CHIP,MELF;5.1Kohm,5%,1/8W,DB,BK,2012	
R362	70795041	2001-000786	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R363	70795213	2007-001629	R-CHIP,MELF;1.8Kohm,5%,1/8W,DB,BK,2012	
R364	70796199	2007-001503	R-CHIP,MELF;47KOHM,5%,1/8W,DB,BK,2012	
R367	BY230179	2001-000595	R-CARBON;3.3MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R397	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R401	70796198	2007-001505	R-CHIP,MELF;470OHM,5%,1/8W,DB,BK,2012	
R402	70796198	2007-001505	R-CHIP,MELF;470OHM,5%,1/8W,DB,BK,2012	
R501	70795215	2007-001497	R-CHIP,MELF;5.6KOHM,5%,1/8W,DB,BK,2012	
R502	70795215	2007-001497	R-CHIP,MELF;5.6KOHM,5%,1/8W,DB,BK,2012	
R503	70795215	2007-001497	R-CHIP,MELF;5.6KOHM,5%,1/8W,DB,BK,2012	
R504	70795215	2007-001497	R-CHIP,MELF;5.6KOHM,5%,1/8W,DB,BK,2012	
R506	70795209	2007-001534	R-CHIP,MELF;33KOHM,5%,1/8W,DB,BK,2012	
R507	70795227	2007-001550	R-CHIP,MELF;3.3Kohm,5%,1/8W,DB,BK,2012	
R510	70795004	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R511	70796199	2007-001503	R-CHIP,MELF;47KOHM,5%,1/8W,DB,BK,2012	
R512	70795004	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R513	70796199	2007-001503	R-CHIP,MELF;47KOHM,5%,1/8W,DB,BK,2012	
R514	70795039	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R515	70795447	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R516	70795039	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R517	70796329	2007-001526	R-CHIP,MELF;36KOHM,5%,1/8W,DB,BK,2012	
R518	70796194	2007-001448	R-CHIP,MELF;9.1KOHM,5%,1/8W,DB,BK,2012	
R519	70795041	2001-000786	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R520	70795041	2001-000786	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R521	70699144	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R522	70795211	2007-001578	R-CHIP,MELF;2.7Kohm,5%,1/8W,DB,BK,2012	
R524	70795011	2001-000331	R-CARBON;12KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R525	70699144	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R527	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R530	70796183	2007-001612	R-CHIP,MELF;12Kohm,5%,1/8W,DB,BK,2012	
R531	70795507	2001-000679	R-CARBON;36KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R601	70795232	2007-001568	R-CHIP,MELF;22Kohm,5%,1/8W,DB,BK,2012	
R602	70795218	2007-001570	R-CHIP,MELF;220ohm,5%,1/8W,DB,BK,2012	
R603	70795232	2007-001568	R-CHIP,MELF;22Kohm,5%,1/8W,DB,BK,2012	
R604	70795218	2007-001570	R-CHIP,MELF;220ohm,5%,1/8W,DB,BK,2012	
R605	BY230144	2001-000111	R-CARBON;150OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R606	70795021	2001-000522	R-CARBON;22KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R607	70796196	2007-001540	R-CHIP,MELF;30KOHM,5%,1/8W,DB,BK,2012	
R608	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R609	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R610	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R611	70796182	2007-001627	R-CHIP,MELF;100Kohm,5%,1/8W,DB,BK,2012	
R613	70795040	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R614	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R615	70795215	2007-001497	R-CHIP,MELF;5.6KOHM,5%,1/8W,DB,BK,2012	
R616	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R617	70795230	2007-001637	R-CHIP,MELF;1.2Kohm,5%,1/8W,DB,BK,2012	
R618	70795029	2001-000633	R-CARBON;30KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R619	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R620	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R621	70796198	2007-001505	R-CHIP,MELF;470OHM,5%,1/8W,DB,BK,2012	
R622	70796198	2007-001505	R-CHIP,MELF;470OHM,5%,1/8W,DB,BK,2012	
R623	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R624	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R625	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R626	70795237	2007-001607	R-CHIP,MELF;13Kohm,5%,1/8W,DB,BK,2012	
R627	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R629	70795030	2001-000003	R-CARBON;330ohm,5%,1/8W,AA,TP,1.8x3.2mm	
R630	70795047	2001-000864	R-CARBON;56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R631	70795047	2001-000864	R-CARBON;56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R632	70795041	2001-000786	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R633	70795234	2007-001572	R-CHIP,MELF;220Kohm,5%,1/8W,DB,BK,2012	
R634	70796331	2007-001507	R-CHIP,MELF;470KOHM,5%,1/8W,DB,BK,2012	
R635	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R637	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R638	70795227	2007-001550	R-CHIP,MELF;3.3Kohm,5%,1/8W,DB,BK,2012	
R639	70795523	2007-000267	R-CHIP;1.8KOHM,5%,1/10W,DA,TP,2012	
R641	70795208	2007-001589	R-CHIP,MELF;1Kohm,5%,1/8W,DB,BK,2012	
R642	70795208	2007-001589	R-CHIP,MELF;1Kohm,5%,1/8W,DB,BK,2012	
R643	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
R644	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R645	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R646	70795215	2007-001497	R-CHIP,MELF;5.6KOHM,5%,1/8W,DB,BK,2012	
R647	70795030	2001-000003	R-CARBON;330ohm,5%,1/8W,AA,TP,1.8x3.2mm	
R648	70795030	2001-000003	R-CARBON;330ohm,5%,1/8W,AA,TP,1.8x3.2mm	
R649	70795221	2007-001513	R-CHIP,MELF;4.7KOHM,5%,1/8W,DB,BK,2012	
R650	70795221	2007-001513	R-CHIP,MELF;4.7KOHM,5%,1/8W,DB,BK,2012	
R651	70795221	2007-001513	R-CHIP,MELF;4.7KOHM,5%,1/8W,DB,BK,2012	
R652	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R656	70795208	2007-001589	R-CHIP,MELF;1Kohm,5%,1/8W,DB,BK,2012	
R657	70795045	2001-000837	R-CARBON;51KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R658	70796192	2007-001493	R-CHIP,MELF;51KOHM,5%,1/8W,DB,BK,2012	
R659	70796369	2003-000259	R-METAL OXIDE;3.9OHM,5%,2W,AE,TP,6X16MM	
R660	BY230030	2007-001472	R-CHIP,MELF;68KOHM,5%,1/8W,DB,BK,2012	
R6B01	70796025	2001-000458	R-CARBON;2.2OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R6F2	70796199	2007-001503	R-CHIP,MELF;47KOHM,5%,1/8W,DB,BK,2012	
R6H01	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R6H02	BY230024	2001-000611	R-CARBON;3.9KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R6H03	70795005	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R701	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R702	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R704	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R705	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R706	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R707	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R708	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R709	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R712	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R714	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R716	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R718	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R720	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R722	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R724	70795233	2007-001623	R-CHIP,MELF;10Kohm,5%,1/8W,DB,BK,2012	
R733	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R741	70795040	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R743	70795040	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R744	70795040	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R745	70795054	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R7F01	70795009	2001-000440	R-CARBON;1OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R7F02	BY230023	2001-000036	R-CARBON;330OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R7FT01	BY230026	2001-000982	R-CARBON;8.2OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R7FT02	BY230026	2001-000982	R-CARBON;8.2OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R7FT03	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT04	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT05	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT06	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT07	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT08	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT09	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT10	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT11	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT12	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT13	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT14	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT15	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT16	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT17	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT18	70795007	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R7FT19	70795029	2001-000633	R-CARBON;30KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R7FT20	70795006	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R801	BY230097	2007-001166	R-CHIP;75OHM,5%,1/10W,DA,TP,2012	
R802	BY230021	2001-000025	R-CARBON;75OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R803	70795353	2001-001026	R-CARBON;910OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R804	70795713	2007-001460	R-CHIP,MELF;75OHM,5%,1/8W,DB,BK,2012	
R8F1	70795208	2007-001589	R-CHIP,MELF;1Kohm,5%,1/8W,DB,BK,2012	
R8F2	70795041	2001-000786	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
<MISCELLANEOUS>				
CN1SS1	70796223	3711-000178	CONNECTOR-HEADER;1WALL,2P,1R,3.96mm,STRA	
CN301	70796387	3708-000391	CONNECTOR-FPC/FC/PIC;10P,1.25MM,STRAIGHT	
CN302	70796246	3711-002445	CONNECTOR-HEADER;BOX,2P,2R,1.5MM,STRAIGH	
CN303	BY634038	3708-001302	CONNECTOR-FPC/FC/PIC;7P,1.25mm,STRAIGHT,	
CN601	BY634047	AC39-20817S	LEAD CONNECTOR-ASSY;DP,SMH200-02,YBH200-	
CN604	BY634026	3711-003749	CONNECTOR-HEADER;BOX,8P,2R,2mm,STRAIGHT,	
CN605	BY634003	3708-001163	CONNECTOR-FPC/FC/PIC;5P,1.25mm,STRAIGHT,	
CN701	BY634040	3711-004013	CONNECTOR-HEADER;3WALL,10P,1R,2mm,STRAIG	
CN703	BY634040	3711-004013	CONNECTOR-HEADER;3WALL,10P,1R,2mm,STRAIG	
CN705	BY634064	3711-004191	CONNECTOR-HEADER;1WALL,2P,1R,5MM,ANGLE,S	

Loc.No.	TSB Parts No.	Reference No.	Description ; Specification	Remark
CN7FT1	BY634039	3710-001385	CONNECTOR-SOCKET;10P,1R,2mm,ANGLE,SN	
CN7FT1	BY634041	3711-004051	CONNECTOR-HEADER;NOWALL,24P,1R,2.5MM,ANG	
CN7FT2	BY634269	3710-001564	CONNECTOR-SOCKET;11P,1R,2mm,ANGLE,SN	
DT701	BY634044	AC07-20051B	VF-DISPLAY;SVV-07SS26,9SEG,20.5x75.0,M68	
F1SD01	70795420	3601-001122	FUSE-CARTRIDGE;250V,1.6A,FAST-ACTING,GLA	⚠
JK7W01	BY634273	AC37-00013A	JACK—PIN;-,-,3P,BLK,DPSE-9946	
JK801	BY634001	AC37-20001G	JACK-RCA;DPAE-,6P,HIFI,PI3.3	
PT1SD1	BY634270	AC26-00001E	TRANS-SWITCHING;-,230V,DEMCO,EE2821,1.3M	⚠
PT601	BY530005	0604-001122	PHOTO-INTERRUPTER;TR,0.065%,150mW,DIP-4,	
PT602	BY530005	0604-001122	PHOTO-INTERRUPTER;TR,0.065%,150mW,DIP-4,	
RM7FT1	BY634036	AC59-60060A	MODULE-REMOCON;GP1U281R,SHARP,38KHZ,-,-,	
S601	BY530003	0603-001011	PHOTO-TR;NPN,35V,6V,50mA,75mW,BK	
S602	BY530003	0603-001011	PHOTO-TR;NPN,35V,6V,50mA,75mW,BK	
SW401	BY632003	3408-001042	SWITCH-SLIDE;DC 12V,100mA,-,OFF-ON,-	
SW602	BY632005	AC34-20100B	SWITCH-REC;-,-,X-9,-	
SW603	BY632004	AC34-20100A	SWITCH-MODE;-,-,X-9,-	
SW7W01	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SW7W02	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SW7W03	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SW7W04	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SW7W06	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SW7W07	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SW7W08	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SW7W09	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
SWTW05	BY632001	3404-000165	SWITCH-TACT;12V,50mA,160gf,6x6mm,SPST	
TM401	BY634275	AC40-00007A	TM-BLOCK;115VD025AP,NTSC-M,115VD025AP,Y	
VA1SS1	BY634022	1405-001026	VARISTOR;470V,600A,9x7mm,TP	⚠
VR501	70795065	2103-000171	VR-SEMI;10Kohm,30%,1/10W,TOP	
XT301	BY633004	2801-003610	CRYSTAL-UNIT;3.579545MHz,8ppm,28-AAA,S,1	
XT601	70796216	2801-001384	CRYSTAL-UNIT;14.31818MHz,30ppm,28-AAA,16	
XT602	BY633003	2801-003318	CRYSTAL-UNIT;32.768KHz,20ppm,28-AAP,12.5	

8. Block Diagram



9. PCB Diagrams

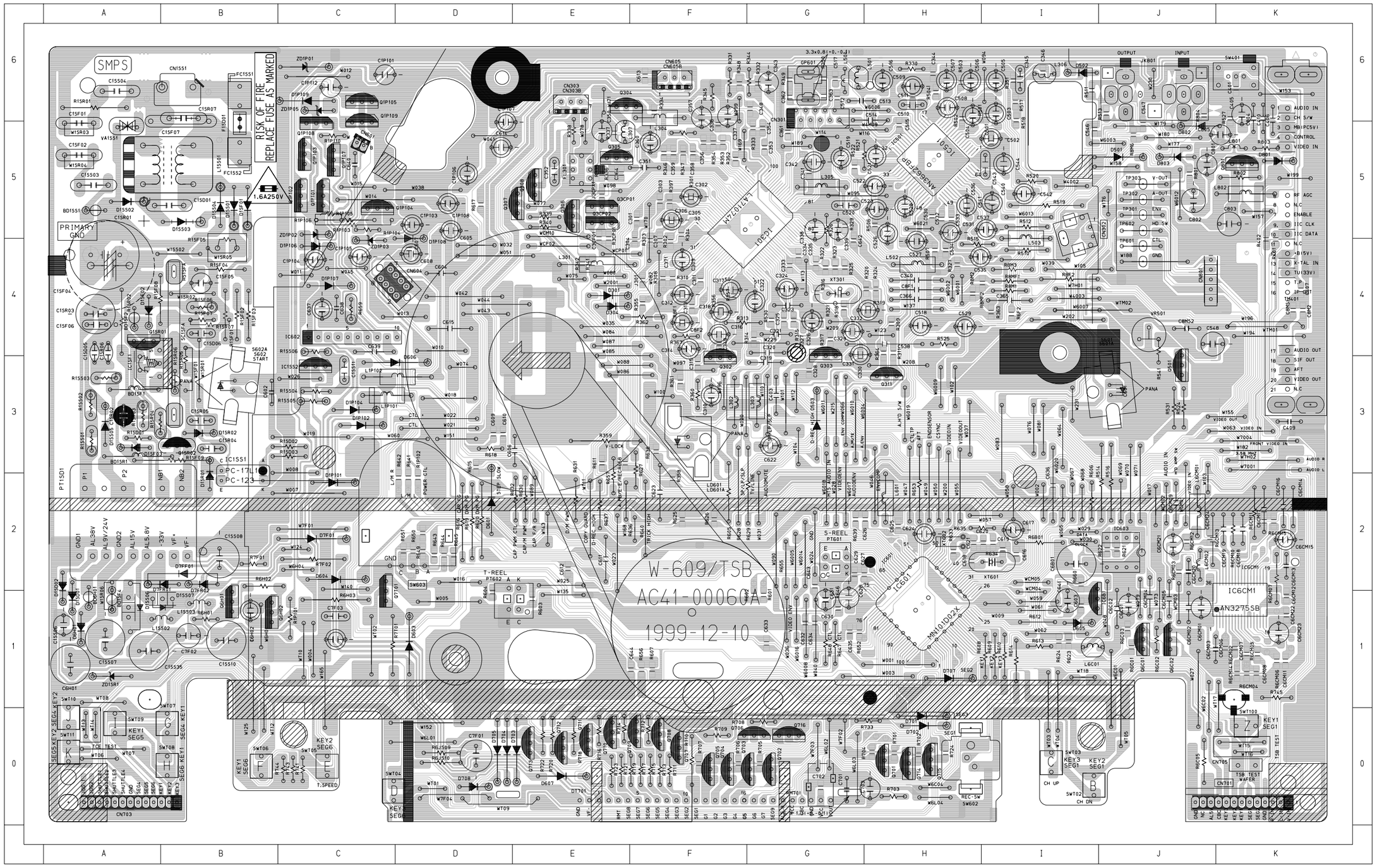
9-1 Main ---------- 9-2

9-2 VFD ---------- 9-3

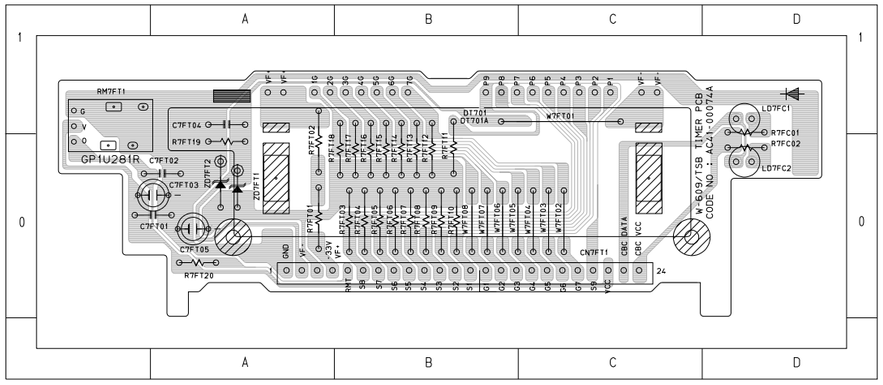
9-3 Jack ---------- 9-3

9-4 Key ---------- 9-3

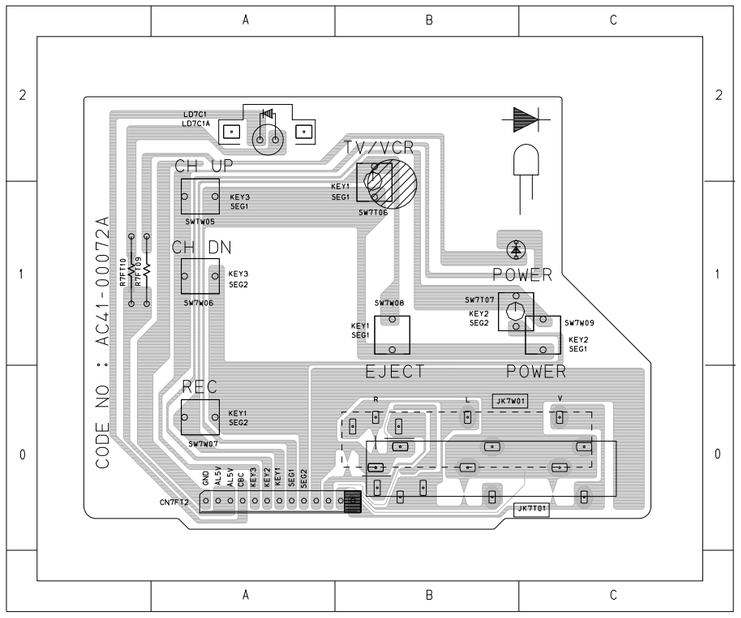
9-1 Main


SMPS
RISK OF FIRE
REPLACE FUSE AS MARKED
1.6A250V
PRIMARY GND
W-609/TSB
AC41-00060A
1999-12-10
IC301
LA71072M
IC601
MN101D02X
IC6CM1
AN3275SB
IC501
AN5662FHP
OUTPUT
INPUT
AUDIO IN
CH S/W
MB/PC5V
CONTROL
VIDEO IN
RF AGC
ENABLE
IIC CLK
IIC DATA
B(5V)
X-TAL IN
TU(33V)
AUDIO OUT
SIF OUT
AFT
VIDEO OUT
FRONT VIDEO IN
CH UP
CH DN
T.SPEED
REC-SW
T-REEL
S-REEL
PANA

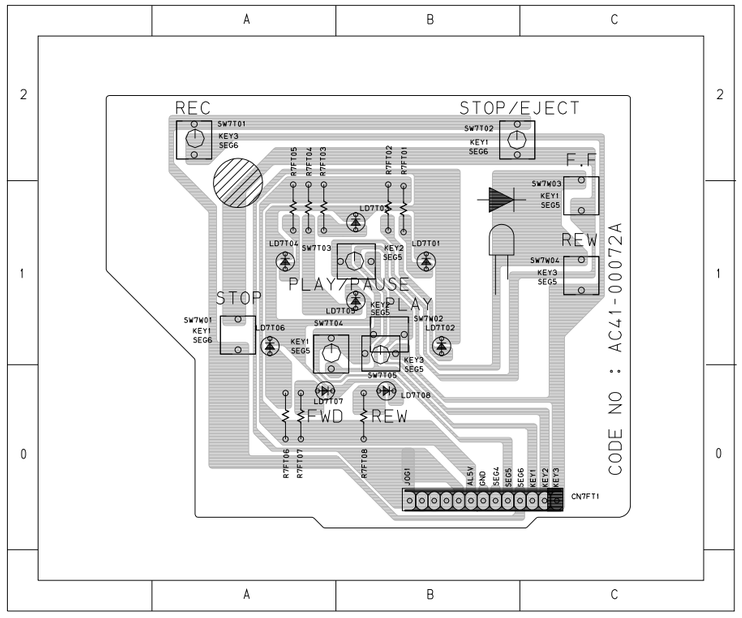
9-2 VFD



9-3 Jack



9-4 Key



10. Schematic Diagrams

◆ Block Identification of Main PCB - 10-2

10-1 S.M.P.S./Power - 10-3

10-2 Logic - 10-4

10-3 A/V - 10-6

10-4 Hi-Fi/MTS - 10-8

10-5 TM-Block/Input-Output - 10-10

10-6 VFD - 10-11

10-7 Remote-Control - 10-12

Note

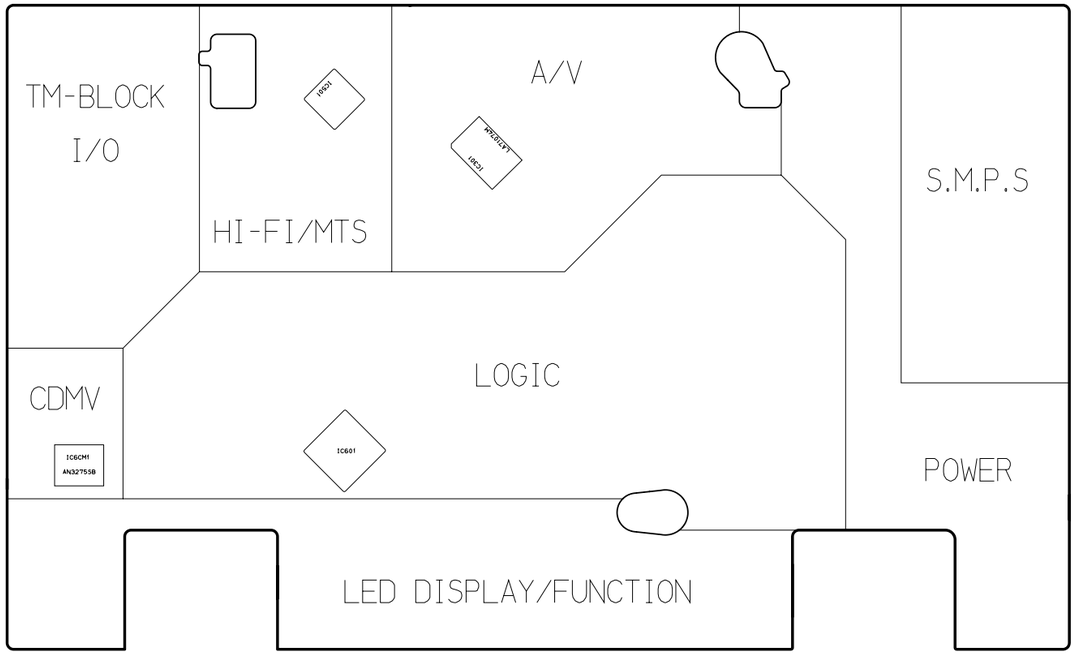
For schematic Diagram
- Resistors are in ohms, 1/8W unless otherwise noted.

Special note :
Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the “electrostatically sensitive (ES) devices” section of this service manual.

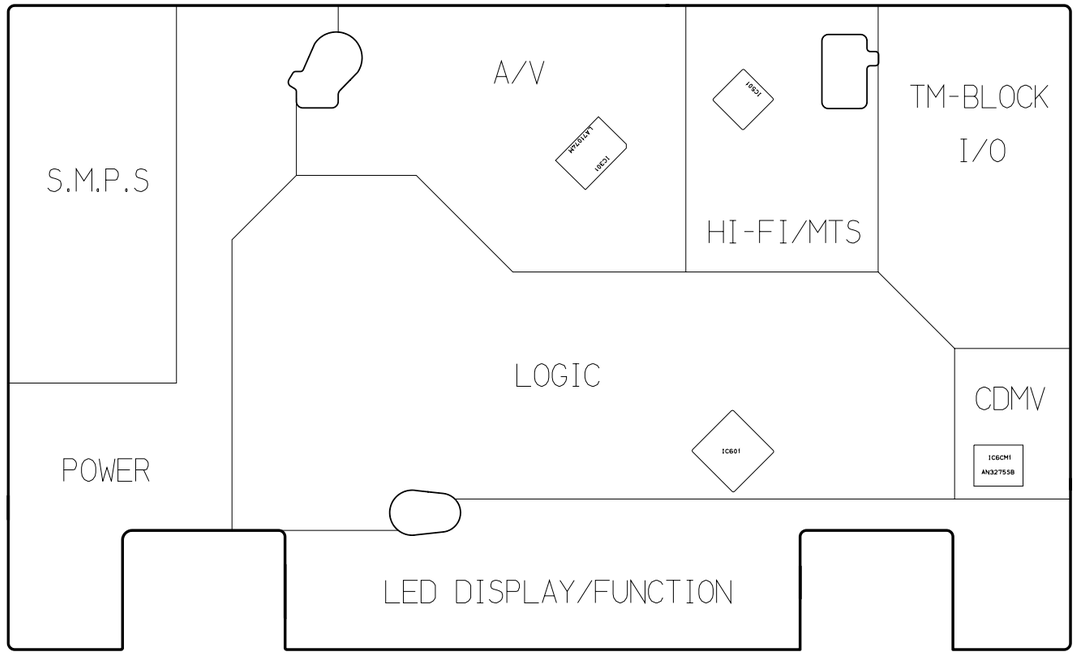
Note :
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

Important safety notices :
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components.
Use only the same type.

◆ Block Identification of Main PCB

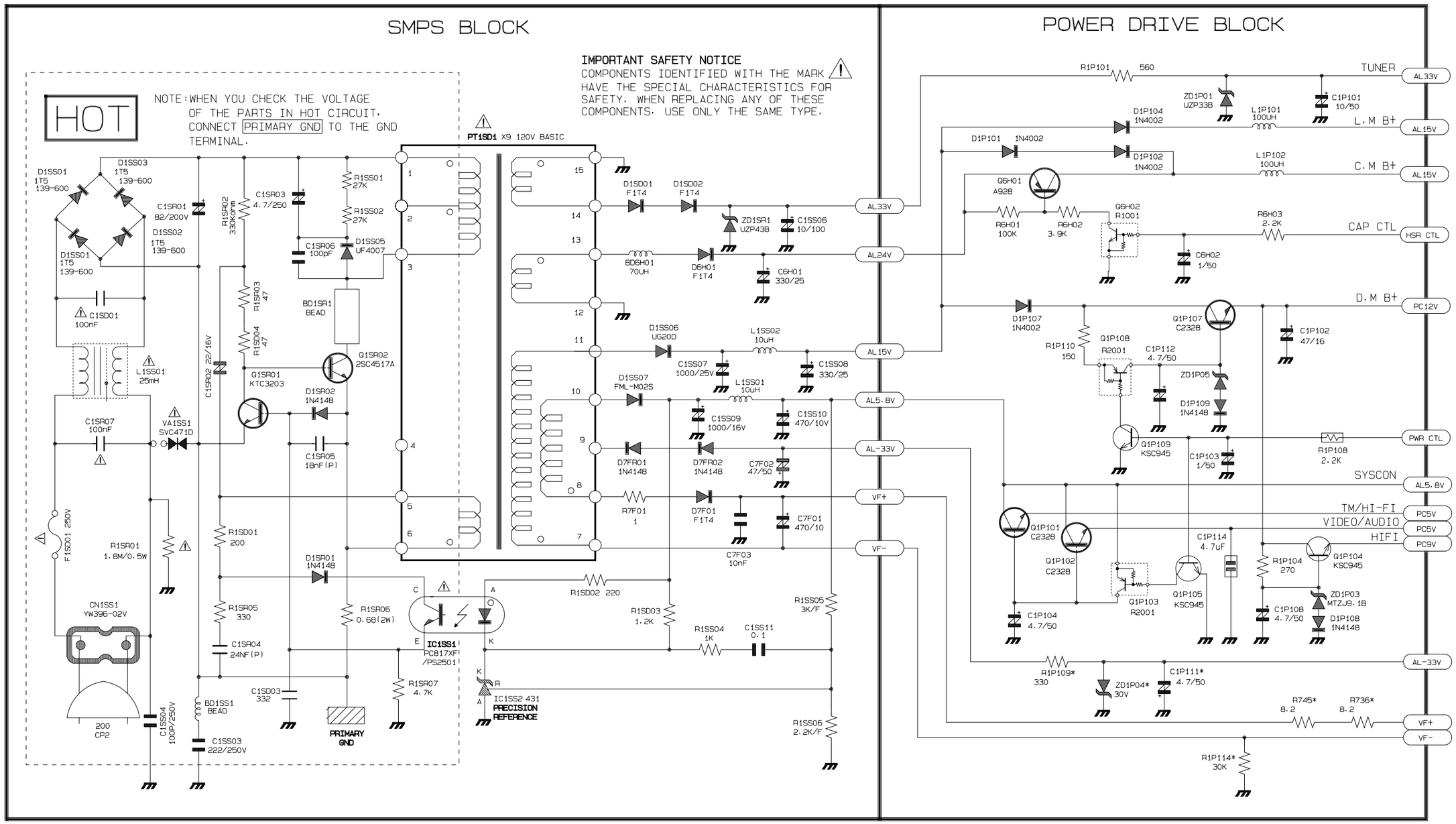


Component Side

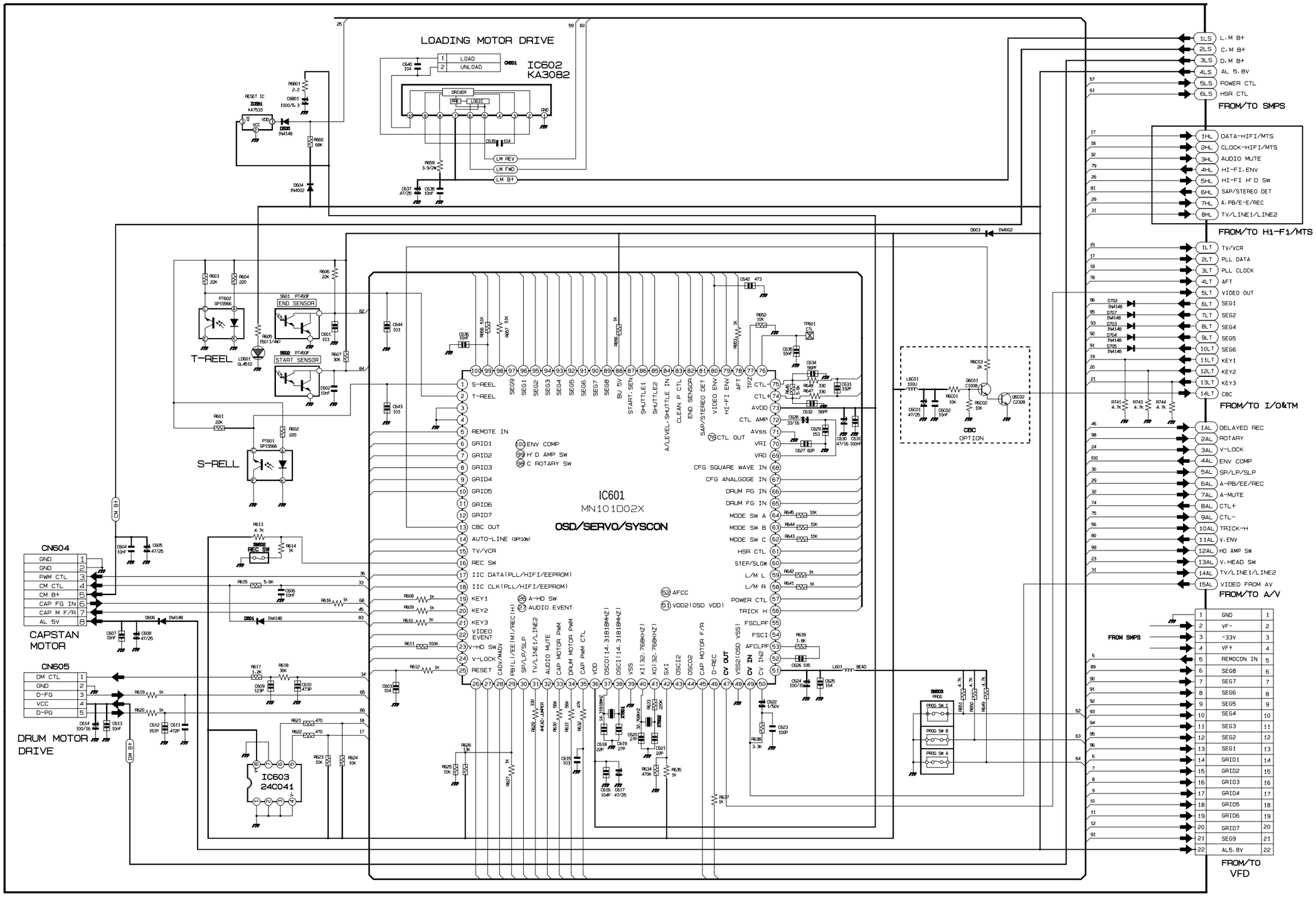


Conductor Side

10-1 S.M.P.S./Power



10-2 Logic


LOADING MOTOR DRIVE
IC602
KA3082
LOAD
UNLOAD
DRIVER
LOGIC
LM REV
LM FWD
LM B+
RESET IC
KA7533
1N4148
1N4002
IC601
MN101D02X
OSD/SERVO/SYSCON
T-REEL
S-REEL
END SENSOR
START SENSOR
REMOTE IN
GRID1
GRID2
GRID3
GRID4
GRID5
GRID6
GRID7
CBC OUT
AUTO-LINE (OPTION)
TV/VCR
REC SW
IIC DATA(PLL/HIFI/EEPROM)
IIC CLK(PLL/HIFI/EEPROM)
KEY1
KEY2
KEY3
VIDEO EVENT
V-HD SW
V-LOCK
RESET
ENV COMP
H'D AMP SW
C ROTARY SW
CTL OUT
AFCC
VDD2(OSD VDD)
CFG SQUARE WAVE IN
CFG ANALGOGE IN
DRUM PG IN
DRUM FG IN
MODE SW A
MODE SW B
MODE SW C
HSR CTL
STEP/SLOW
L/M L
L/M R
POWER CTL
TRICK H
A-HD SW
AUDIO EVENT
CN604
CAPSTAN MOTOR
CN605
DRUM MOTOR DRIVE
IC603
24C041
REC SW
CBC OPTION
PROG SW C
PROG SW B
PROG SW A
FROM/TO SMPS
DATA-HIFI/MTS
CLOCK-HIFI/MTS
AUDIO MUTE
HI-FI.ENV
HI-FI H'D SW
SAP/STEREO DET
A.PB/E-E/REC
TV/LINE1/LINE2
FROM/TO HI-FI/MTS
TV/VCR
PLL DATA
PLL CLOCK
AFT
VIDEO OUT
SEG1
SEG2
SEG4
SEG5
SEG6
KEY1
KEY2
KEY3
CBC
FROM/TO I/O&TM
DELAYED REC
ROTARY
V-LOCK
ENV COMP
SP/LP/SLP
A-PB/EE/REC
A-MUTE
CTL+
CTL-
TRICK-H
V.ENV
HD AMP SW
V.HEAD SW
TV/LINE1/LINE2
VIDEO FROM AV
FROM/TO A/V
FROM SMPS
GND
VF-
-33V
VF+
REMOCON IN
SEG8
SEG7
SEG6
SEG5
SEG4
SEG3
SEG2
SEG1
GRID1
GRID2
GRID3
GRID4
GRID5
GRID6
GRID7
SEG9
AL5.8V
FROM/TO VFD

IC601 VOLTAGE TABLE

* These values are measured with a Hi-Fi standard tape.

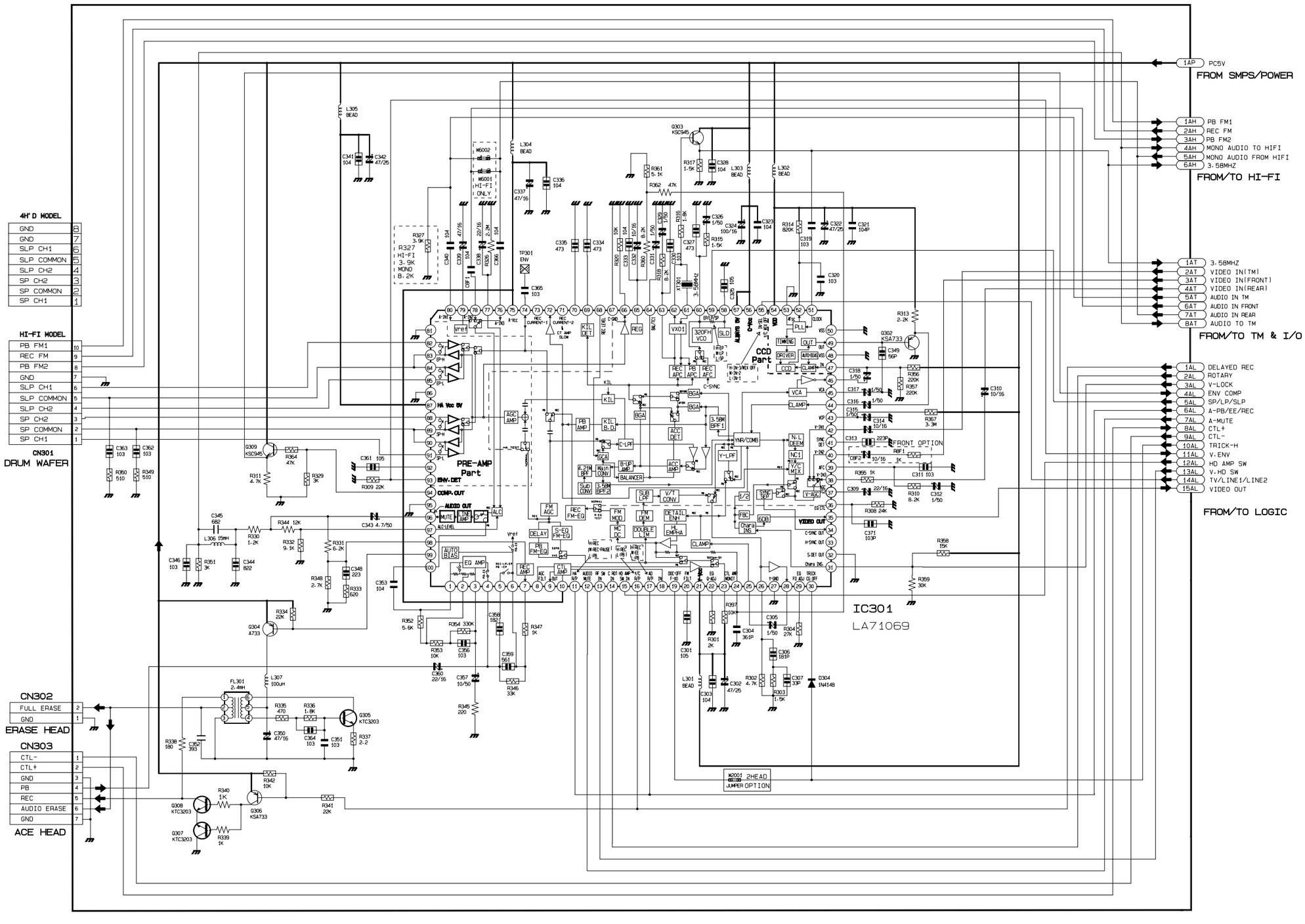
* 5p-p means 5 volts peak to peak. It's a kind of data or clock wave form.

* The value under 0.5 volt is regarded as 0 volt.

Unit : Volt

Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play
1	0	5 or 0	5p-p	26	5	5	5p-p	51	5	5	5	76	2.5	2.5 0	
2	0	5 or 0	5p-p	27	0	0	0	52	2.8	2.8	2.8	77	0	2.5 0	
3	0	0	0	28	0	0	0	53	2.5	2.5	2.5	78	0	0	0
4	0	0	0	29	PB:1.3, EE:2.2, REC:5			54	0	0	0	79	0	5	2.5
5	None input : 5, Any input : 5p-p			30	SP:0, LP:0, SLP:0			55	0	0	0	80	0	0	3
6	5p-p data for LED display			31	0	0	0	56	0	0	0	81	0	2.2p-p	2.2p-p
7				32	2	5	0	57	5	5	5	82	5	5	5
8				33	5	5	5p-p	58	5	5	5	83	0	0	0
9				34	0	5p-p	5p-p	59	5	5	5	84	0	0	0
10				35	0	0	5p-p	60	0	0	0	85	0	0	0
11				36	5	5	5	61	0	0	0	86	0	0	0
12				37	Clock data			62	0	0	0	87	5	5	5
13	0	0	0	38				63	0	5	5	88	5	5	5
14	5V when the front video jack is inerted			39	0	0	0	64	0	0	0	89	5p-p data for LED display		
15	5	VCR:5, TV:0		40	Clock data			65	0	5p-p	5p-p	90			
16	Safety Tab, YES:5, NO:0			41				66	0	5p-p	5p-p	91			
17	5p-p for Hi-Fi/EEPROM/PLL data,clock			42	5	5	5	67	0	5	5p-p	92			
18				43	0	0	5p-p	68	0	0	0	93			
19	0	0	0	44	0	0	5p-p	69	2.5	2.5	2.5	94			
20	0	0	0	45	5	5	0	70	2.5	2.5	2.5	95			
21	0	0	0	46	5	5	0	71	0	0	0	96			
22	0	0	0	47	Video out signal			72	2.5	2.5	2.5	97			
23	0	5p-p	5p-p	48	0	0	0	73	5	5	5	98	0	5p-p	5p-p
24	0	0	0	49	Video input signal			74	2.5	2.5	2.5	99	0	5	0
25	5	5	5	50				75	2.5	2.5	2.5	100	0	1	0

10-3 A/V

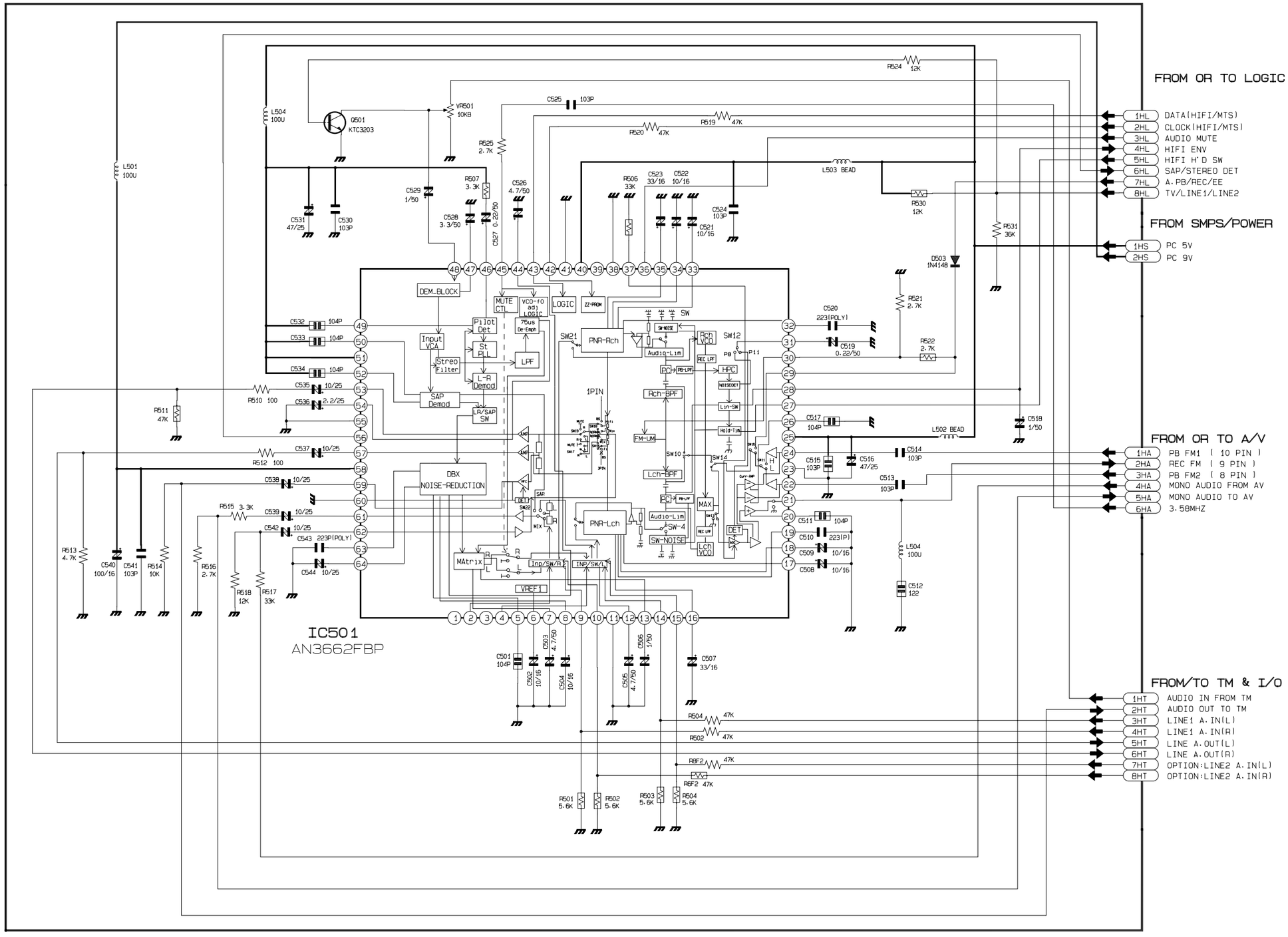

4H' D MODEL
GND 8
GND 7
SLP CH1 6
SLP COMMON 5
SLP CH2 4
SP CH2 3
SP COMMON 2
SP CH1 1
HI-FI MODEL
PB FM1 10
REC FM 9
PB FM2 8
GND 7
SLP CH1 6
SLP COMMON 5
SLP CH2 4
SP CH2 3
SP COMMON 2
SP CH1 1
CN301
DRUM WAFER
CN302
FULL ERASE 2
GND 1
ERASE HEAD
CN303
CTL- 1
CTL+ 2
GND 3
PB 4
REC 5
AUDIO ERASE 6
GND 7
ACE HEAD
1AP PC5V
FROM SMPS/POWER
1AH PB FM1
2AH REC FM
3AH PB FM2
4AH MONO AUDIO TO HIFI
5AH MONO AUDIO FROM HIFI
6AH 3.58MHZ
FROM/TO HI-FI
1AT 3.58MHZ
2AT VIDEO IN(TM)
3AT VIDEO IN(FRONT)
4AT VIDEO IN(REAR)
5AT AUDIO IN TM
6AT AUDIO IN FRONT
7AT AUDIO IN REAR
8AT AUDIO TO TM
FROM/TO TM & I/O
1AL DELAYED REC
2AL ROTARY
3AL V-LOCK
4AL ENV COMP
5AL SP/LP/SLP
6AL A-PB/EE/REC
7AL A-MUTE
8AL CTL+
9AL CTL-
10AL TRICK-H
11AL V.ENV
12AL HD AMP SW
13AL V.HD SW
14AL TV/LINE1/LINE2
15AL VIDEO OUT
FROM/TO LOGIC
IC301
LA71069
CCD Part
PRE-AMP Part
FRONT OPTION
W2001 2HEAD
JUMPER OPTION

IC301 VOLTAGE TABLE

Unit : Volt

Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play
1	2.5	2.5	2.5	25	3	3	3	51	0	0.8	0.8	76	Audio from TM-block		
2	2.5	2.5	2.5	26	2.2	2	2.2	52	0.8	2.3	2.3	77	0	0 0	
3	2.5	2.5	2.5	27	0	0	0	53	0	0	0	78	Audio from L2(front)		
4	2.5	2.5	2.5	28	1.2	1.6	1.6	54	1	5	5	79	0	2.4 2.4	
5	0	0	0	29	0	1	1	55	0	0.3	0.3	80	Audio from L1(rear)		
6	2.5	2.5	2.5	30	0	0	0	56	1	5	5	81	0	0 0	
7	2.5	2.5	2.5	32	0	0	0	57	1	5	5	82	0	0.7 0.7	
8	1.8	1.8	1.8	33	0.4	5p-p	5p-p	58	1	3.6	3.6	83	0	0.7 0.7	
9	0	0	0	34	0	5p-p	5p-p	59	0	0	0	84	0	0.7 0.7	
10	5	5	5	35	0.8	Video Out	Video Out	60	0.9	3.8	3.8	85	0	0.7 0.7	
11	2.2	3.1	0	36	0	1	1	61	0.5	4	4	86	0	0 0	
12	5	5	0	37	1.3	1.3	1.3	62	0	2.7	2.7	87	0	5 5	
13	0	0.8p-p	0.8p-p	38	Video from L1(rear)			63	0	2	2	88	0	4.4 1.8	
14	0	0.8p-p	0.8p-p	39	0	3.5	3.5	64	0.7	2.2	2.2	89	0	4.4 1.8	
15	0	0.8	0	40	Video from L2(front)			65	0	4	4	90	0	4.4 1.8	
16	5	5	0.3	41	0	0.2	5	66	0	2	0	91	0	4.4 1.8	
17	2.2	2.2	0	42	Video from TM-block			67	0	0	0	92	0.4	1.7 0.3	
18	1.8	1.8	1.8	43	0.9	3.7	3.3	68	0.4	2.4	2.4	93	0	0 2.7	
19	0	0	0	44	0.5	2.8	2.8	69	0	3.1	2	94	0	1.2 0	
20	1.6	1.6	1.6	45	1	2.9	3	70	0.3	2.4	1.8	95	0	0 0	
21	5	5	5	46	0.4	3	2.7	71	0.3	2.4	2.4	96	0	2.4 2.4	
22	0.8	0.8	0.8	47	0.4	2.8	2.4	72	0.1	2.8	2.8	97	0	0 0	
23	0.3	0.3	0.3	48	0	0	0	73	0.4	2.4	2.4	98	0	0 0	
24	2.3	2.3	1.4	49	0.6	1.8	1.8	74	0	0	2	99	1	5 5	
25	3	3	3	50	0	0	0	75	1	5	5	100	0	2.5 2.5	

10-4 Hi-Fi/MTS

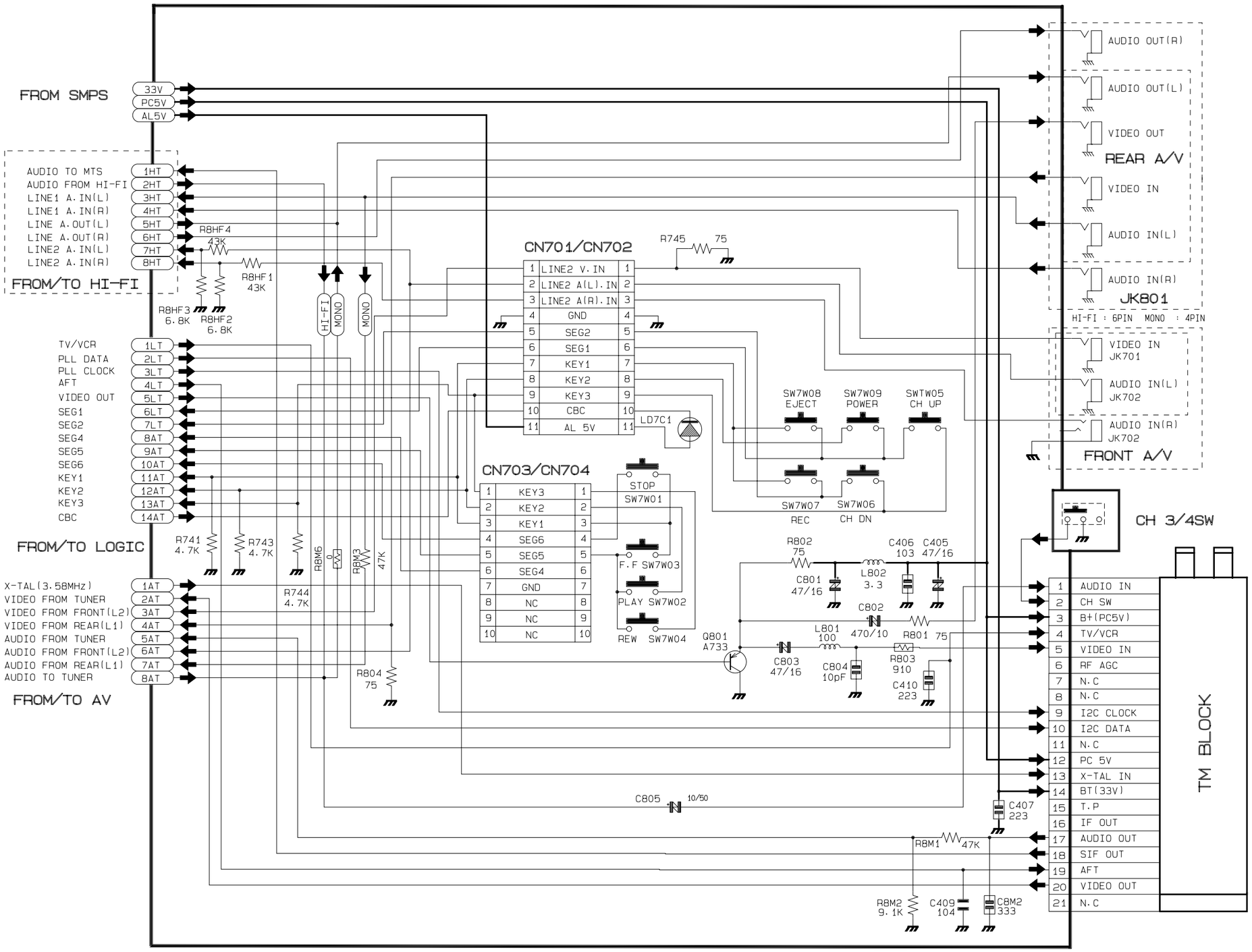

IC501
AN3662FBP
FROM OR TO LOGIC
1HL DATA(HIFI/MTS)
2HL CLOCK(HIFI/MTS)
3HL AUDIO MUTE
4HL HIFI ENV
5HL HIFI H'D SW
6HL SAP/STEREO DET
7HL A.PB/REC/EE
8HL TV/LINE1/LINE2
FROM SMPS/POWER
1HS PC 5V
2HS PC 9V
FROM OR TO A/V
1HA PB FM1 (10 PIN)
2HA REC FM (9 PIN)
3HA PB FM2 (8 PIN)
4HA MONO AUDIO FROM AV
5HA MONO AUDIO TO AV
6HA 3.58MHZ
FROM/TO TM & I/O
1HT AUDIO IN FROM TM
2HT AUDIO OUT TO TM
3HT LINE1 A.IN(L)
4HT LINE1 A.IN(R)
5HT LINE A.OUT(L)
6HT LINE A.OUT(R)
7HT OPTION:LINE2 A.IN(L)
8HT OPTION:LINE2 A.IN(R)
DEM_BLOCK
MUTE CTL
VCO-fo adj LOGIC
LOGIC
ZZ-PROM
Pilot Det
St PLL
Stereo Filter
Input VCA
75us De-Emph
LPF
SAP Demod
L-R Demod
LR/SAP SW
DBX NOISE-REDUCTION
MAtrix
Inp/SW/R
INP/SW/L
VREF1
PNR-Rch
PNR-Lch
Rch VCO
Lch VCO
Audio-Lim
SW-NOISE
SW-4
Rch-BPF
Lch-BPF
FM-LIM
Lin-SW
Hold-Tim
HPC
PC
PB-LPF
REC LPF
MAX
DET
SAP
MIX
1PIN
SW21
SW12
SW10
SW14
SW22
SW
SW-MUTE
L503 BEAD
L502 BEAD
L501 100U
L504 100U
Q501 KTC3203
VR501 10KB
R524 12K
R519 47K
R520 47K
R525 2.7K
R530 12K
R531 36K
R521 2.7K
R522 2.7K
R511 47K
R510 100
R512 100
R513 4.7K
R514 10K
R515 3.3K
R516 2.7K
R517 33K
R518 12K
R501 5.6K
R502 5.6K
R503 5.6K
R504 5.6K
RBF2 47K
D503 1N4148
C525 103P
C526 4.7/50
C527 0.22/50
C528 3.3/50
C529 1/50
C530 103P
C531 47/25
C521 10/16
C522 10/16
C523 33/16
C524 103P
C520 223(POLY)
C519 0.22/50
C517 104P
C518 1/50
C514 103P
C515 103P
C516 47/25
C513 103P
C511 104P
C510 223(P)
C509 10/16
C508 10/16
C512 122
C501 104P
C502 10/16
C503 4.7/50
C504 10/16
C505 4.7/50
C506 1/50
C507 33/16
C532 104P
C533 104P
C534 104P
C535 10/25
C536 2.2/25
C537 10/25
C538 10/25
C539 10/25
C542 10/25
C543 223P(POLY)
C544 10/25
C540 100/16
C541 103P

IC501 VOLTAGE TABLE

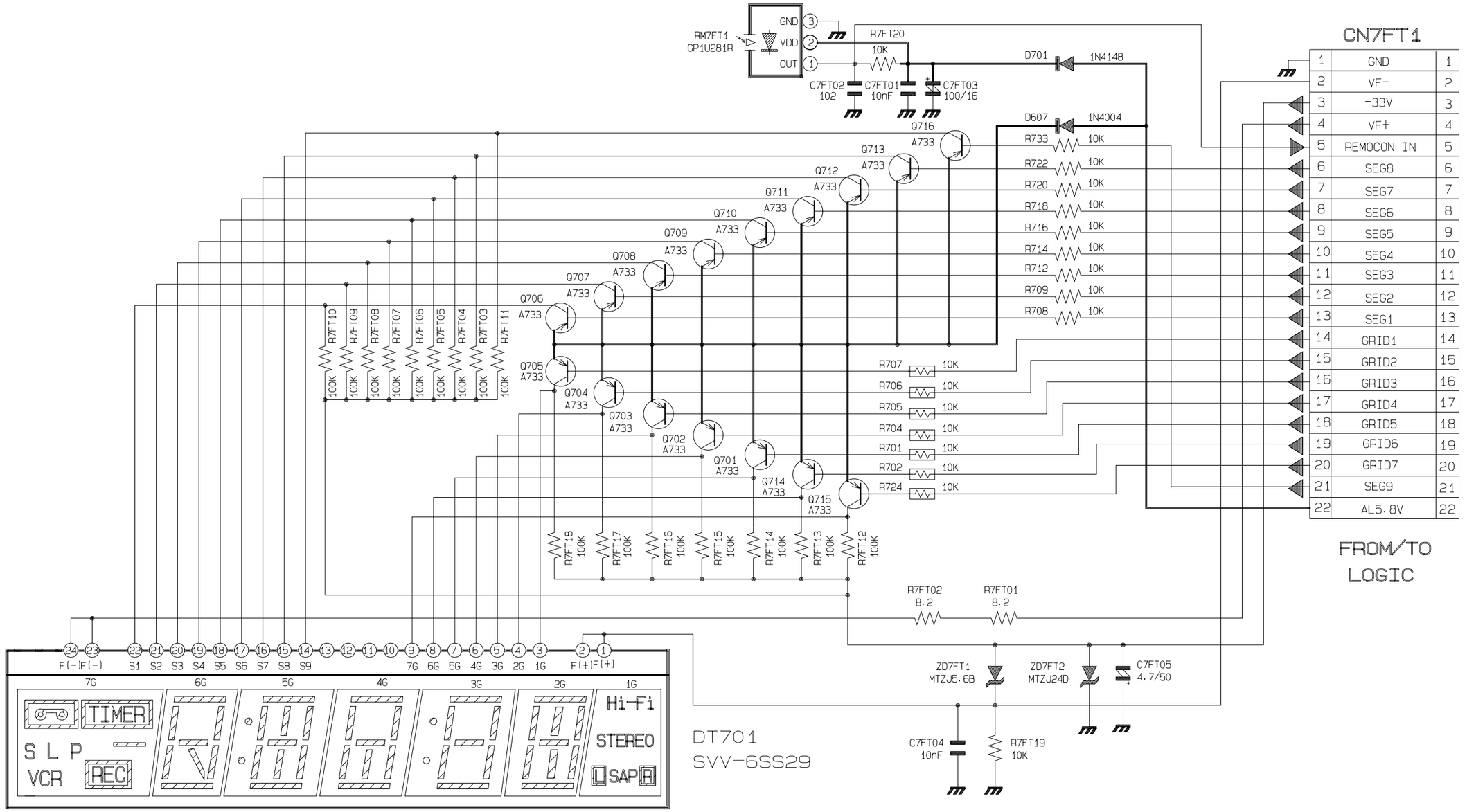
Unit : Volt

Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play	Pin No.	Power Off	Stop(EE)	Play
1	0.3	2.5	2.5	17	0.7	0.4	0.7	33	0.3	2.5	2.5	49	0	3.5 3.5	
2	0	0	0	18	0.3	2.5	2.5	34	0.7	0.5	0.7	50	0	3	3
3	0.3	2.5	2.5	19	0.3	2.5	2.5	35	0.7	2.5	2.5	51	0	5	5
4	0	0	0	20	0	2.5	0	36	1.9	5	0	52	0	3.1 3.1	
5	0.3	2.2	2.2	21	0	2.5	0	37	0	1.7	1.7	53	0	4.6 4.6	
6	0.3	2.5	2.5	22	0	2.5	0.6	38	0	0	0	54	0.3	2.5 2.5	
7	0.7	2.2	2.2	23	0	0	0	39	0	0	0	55	0	0	0
8	0.6	0.7	0.7	24	0	2.5	0.6	40	1	5	5	56	0	2p-p	2.2p-p
9	Audio R from rear jack (L1)			25	0	5	5	41	0	0	0	57	0	4.6 4.6	
10	Audio R from front jack (option)			26	0	2.5	0	42	5p-p for Hi-Fi data,clock			58	0.3	9	9
11	0	0	0	27	5	5p-p	5p-p	43				59	Audio to TM-block		
12	0.7	2	2	28	0	4.4	4.4	44	0.4	2.4	2.4	60	0	0	0
13	0.3	2.3	2.3	29	0.7	1.9	1.9	45	0	0	0	61	0	2.5 2.5	
14	Audio R from rear jack (L1)			30	0.3	0.9	0.9	46	0	3.7	3.7	62	0.3	2.5 2.5	
15	Audio L from front jack (option)			31	0.1	0.1	0	47	0.7	1.6	1.6	63	0.3	2.3 2.3	
16	0.7	2.5	2.5	32	0.3	2.5	2.5	48	Audio from TM-block			64	0.6	0.7 0.7	

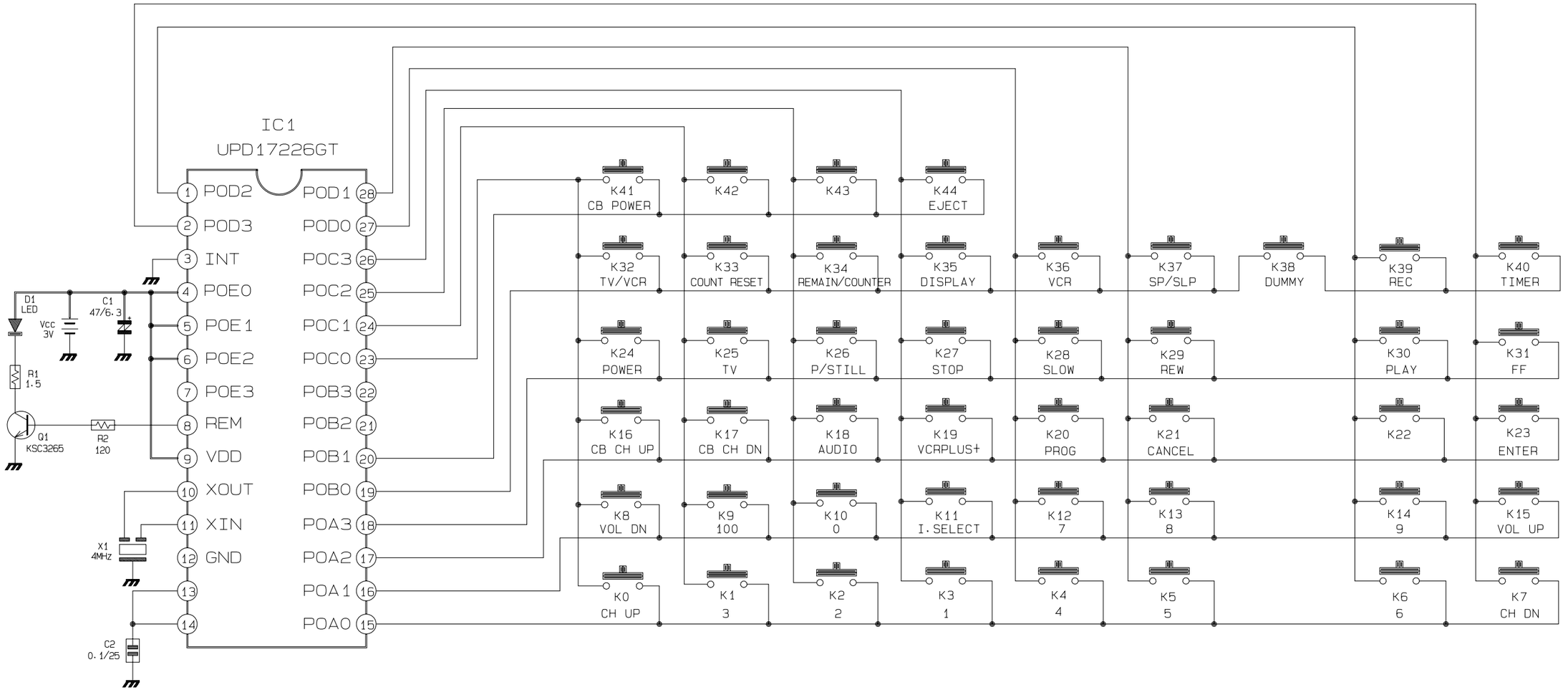
10-5 TM-Block/Input-Ouput



10-6 VFD


RM7FT1
GP1U281R
GND
VDD
OUT
R7FT20
10K
C7FT02
102
C7FT01
10nF
C7FT03
100/16
D701
1N4148
D607
1N4004
Q716
A733
Q713
Q712
Q711
Q710
Q709
Q708
Q707
Q706
Q705
Q704
Q703
Q702
Q701
Q714
Q715
R733
R722
R720
R718
R716
R714
R712
R709
R708
R707
R706
R705
R704
R701
R702
R724
10K
R7FT10
R7FT09
R7FT08
R7FT07
R7FT06
R7FT05
R7FT04
R7FT03
R7FT11
R7FT18
R7FT17
R7FT16
R7FT15
R7FT14
R7FT13
R7FT12
100K
CN7FT1
1 GND 1
2 VF- 2
3 -33V 3
4 VF+ 4
5 REMOCON IN 5
6 SEG8 6
7 SEG7 7
8 SEG6 8
9 SEG5 9
10 SEG4 10
11 SEG3 11
12 SEG2 12
13 SEG1 13
14 GRID1 14
15 GRID2 15
16 GRID3 16
17 GRID4 17
18 GRID5 18
19 GRID6 19
20 GRID7 20
21 SEG9 21
22 AL5.8V 22
FROM/TO
LOGIC
R7FT02
8.2
R7FT01
8.2
ZD7FT1
MTZJ5.6B
ZD7FT2
MTZJ24D
C7FT05
4.7/50
C7FT04
10nF
R7FT19
10K
F(-)F(-)
S1 S2 S3 S4 S5 S6 S7 S8 S9
7G 6G 5G 4G 3G 2G 1G
F(+)F(+)
TIMER
S L P
VCR
REC
Hi-Fi
STEREO
SAP
DT701
SVV-6SS29

10-7 Remote-Control



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